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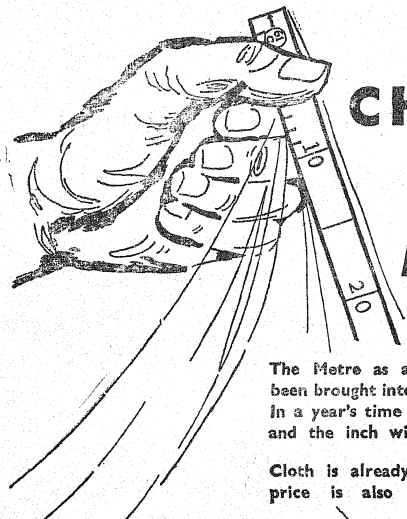
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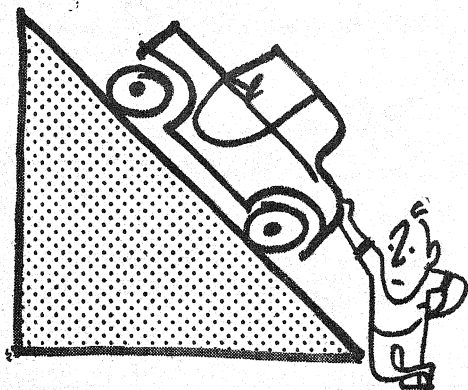
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The Journal of the United Service Institution of India

VOL. LXXXXII

JANUARY-MARCH, 1962

No. 386

EDITORIAL

CIVILIANS' TASK IN NATIONAL DEFENCE

IT is recognised the world over that when a nation's security is threatened, it is not merely the armed forces on whom the burden of defence is cast but the entire people; hence the expression "a nation in arms." Our country is no exception to this. While in its relations with other countries India is wedded to the policy of Panch Sheel, this by no means implies that when aggression is committed on our soil we will take it lying down. Preparedness for defence has been the keynote of India's policy for years now.

Such preparedness inevitably means the raising and maintenance of a standing army in fighting trim. India's vast size makes a very big and powerful army a vital necessity. But then a developing country which is trying to solve the many problems handed down from the colonial era can hardly afford to divert substantial financial resources for this purpose. This was recognized quite early by the country's leadership; thus came into existence well-organized civilian auxiliary forces which form the second line of defence.

We invite the reader's attention to the Gold Medal essay on "India's auxiliary forces" published in this issue; in the context of the threats to India's security from China and Pakistan, the author has rightly emphasized that the auxiliary forces must be trained to be prepared in an emergency to: (a) take over all internal security and garrison duties; (b) ensure that services essential to the prosecution of war are efficiently maintained; and (c) provide certain additional technical units, particularly in the field of transportation. The idea is that the regular armed forces will then be enabled to concentrate on their chief job of defending the country against the invader and driving him back.

Participation in the auxiliary forces therefore becomes an imperative patriotic duty of every young man and woman in the country. Facilities have been amply provided so that every youth can receive military training in his or her spare time and continue to be in his or her civilian avocation till the call to arms comes. In recent years the response has been quite gratifying, as evidenced by the progress made by the Territorial Army, the Auxiliary Air Force, the Lok Sahayak Sena, the National Cadet Corps and the Auxiliary Cadet Corps. There is every reason to feel confident that in the years to come those who have been trained in these auxiliary forces will prove worthy of the nation's pride. In fact, these form a reassuring safeguard and make it possible to keep the strength of the regular forces down to the absolute minimum commensurate with security.

But the chief point made by the author of the Gold Medal essay is not the role of these forces in time of war. Important as that is, he says, a reorientation of ideas regarding the employment of these auxiliary forces in peace time is an urgent necessity. They must be gainfully and purposefully utilized in times of peace, "for example in building up morale and discipline in the general public and in rendering assistance in emergencies such as floods and other calamities and where considered appropriate during any breakdown of essential services, whether due to strikes or lockouts or other causes." The men of the auxiliary forces will also be the most effective messengers of national integration, since they come from different parts of the country and learn to live together as a community. This sense of national unity that they develop during training they carry back to their homes. In fact, in the great task of keeping the nation together these trainees will form the hard core of local leadership. As the essay points out, the auxiliary forces, organised on a regional basis, must intimately associate themselves with the citizens of their areas. This is particularly necessary in respect of the rural areas.

It is equally important for the government and the public to appreciate the role of the auxiliary forces. All necessary steps must be taken to keep their prestige high, even though their emoluments may be modest. The common people should be made to understand the significance of these forces which have the task of forming the link between the armed forces and the public in times of emergency, which in fact constitute a vast reserve force to protect the country's hard-won freedom. We commend the many suggestions for making the auxiliary forces effective that have been made in the Gold Medal essay.

INDIA'S AUXILIARY FORCES

Brigadier R. SAWHNY

SUBJECT

"No country in times of peace can afford to maintain the full quantum of forces they will require in time of war. In peace, therefore, they maintain only those regular forces that they can afford, but build up by various devices, volunteer, semi-trained or part-time auxiliary forces which can, in times of emergency, be incorporated as whole-time participants into the overall military plan. The organisation and types of such auxiliary forces naturally vary from country to country so as to suit differing requirements and backgrounds. Sometimes such forces play a dual role in that they are also designed to build up national morale or discipline. With the background and problems of our own country, what do you consider should be the organisation and type of auxiliary forces we should maintain?"

IN times of peace even the Great Powers cannot afford to maintain the full quantum of forces they require in war, and consequently have to augment their regular troops by less expensive auxiliary forces, which in times of emergency can be integrated into the overall military plan. In the case of underdeveloped and comparatively poor nations, such as India, even greater reliance on auxiliary forces would appear necessary.

This paper attempts to analyse modern strategic trends in relation to India's defence problems, to deduce the correct role that should be allotted to our auxiliary forces in war and in peace, and to suggest the type of forces that should be maintained and how they should be recruited and organised.

STRATEGIC TRENDS

Prior to World War II it was a generally accepted military maxim that the ultimate national aim was to impose the national will on the enemy. In the context of the modern world situation, it is doubtful if this now holds good even for the great powers. India is committed to a policy of non-aggression and co-existence. Our national aim must, therefore, inevitably acquire a defensive bias, and may appropriately be defined as being "to prevent anyone imposing their will on our nation," thereby permitting our people to pursue without interference their chosen way of life.

Resort to or threat of armed aggression is not the only way in which an enemy may seek to impose his will. Other methods are propaganda, political and/or economic pressure, and internal subversion. The type and intensity of pressure exerted by the enemy will undoubtedly vary in accordance with his assessment of the course or courses best calculated to achieve his purpose. Our national plan, therefore, must not be rigid but balanced and flexible. It is essential that all threats to national security, whether in the military, political or economic field, should be carefully evaluated and adequate

* This essay was awarded cash prize for the best entry.

steps taken to meet every likely threat. A fundamental requirement of national strategy must be to allocate and employ all our limited national resources so as most effectively to prevent any other nation imposing its will on us.

While threat of armed aggression against India cannot be ruled out, there is a great likelihood that if reasonably adequate forces are maintained, no major armed aggression against us will take place in the foreseeable future. Although it would be dangerous to forgo the insurance that armed strength provides, it would also be wrong, in view of our sorely limited resources, to indulge in the luxury of over-insurance on security at the expense of national development.

In the opinion of this writer, whilst the primary role of the regular armed forces must be to afford national security against armed aggression, wherever compatible with this role, our regular and auxiliary forces, particularly the latter, must also be trained and employed to build up the nation's defences in the political and economic fields. The validity of this concept will probably be vigorously opposed by traditionalists brought up to believe that politics and soldiering are an explosive mixture. The fact that it is most undesirable for a soldier's affinity for any political party or politician to interfere with the impartial and efficient performance of his military duty, does not in any way reduce the importance that must be attached to economic and political considerations in planning the overall national strategy. As Clausewitz—so aptly put it, "War is but a continuation of policy by other means."

NUCLEAR PLENTY

It is generally accepted that the stage of nuclear plenty has been reached by the giant powers, the USA and USSR. Both now possess sufficient nuclear weapons and means of delivery to ensure that an all-out nuclear war would virtually amount not only to mutual national suicide but perhaps also to the total destruction of civilisation on earth. These devastating consequences are in themselves a great deterrent to such a war, and it can be argued that, as the chances of a major nuclear war recede, the possibility of limited wars increases—also that the great powers may well indulge in a sort of warfare by proxy. However, the inherent dangers of a local war spreading and sparking off a general war are so great that the prospects have greatly been enhanced of the United Nations succeeding in localising conflict and bringing about a speedy termination of active hostilities.

In order to forestall world reaction through the UN, an aggressor before launching an attack will probably take steps to confuse the issue as to which side is the aggressor, and instead of contemplating a long-drawn-out campaign he is more likely to attempt to rapidly capture important objectives, possession of which he hopes to retain, until and even perhaps after the UN intervenes and brings about a cease-fire. To foil any such plans of a potential aggressor, our nation must be ready to react instantly, with sufficient properly equipped and trained forces, previously deployed in suitable areas.

Possibility of India's involvement in a nuclear war must be excluded from our consideration. Our Government has categorically declared that India will neither produce or acquire nuclear weapons. This does not leave us entirely at the mercy of any great power. The strategic importance of our country, with its vast manpower and resources, is so great that neither of the power blocs, in its own interest, can afford to permit the other to impose its will on us.

For the foreseeable future, India's defence policy must provide for the possibility of war with China or Pakistan. As a calculated risk it can reasonably be assumed that such a conflict will be limited to conventional weapons and will be of short duration—say not more than six months. Our defence policy must, of course, also provide for security against any internal elements that may attempt subversion by armed violence.

Conditions today are very different from those at the outbreak of World War II. We must base the organisation and employment of our regular and auxiliary forces on present and likely future conditions, not on past experience alone.

In the past auxiliary forces have been considered first reinforcements for regular troops. The normal practice has been for auxiliary units to be embodied at the outbreak of war, and after a period devoted to equipping and intensive training, to relieve regular units, initially in duties of a garrison nature, and perhaps at a later stage to take their place in active combat.

In view of the probably short duration of any war involving our country, there will not be sufficient time after the outbreak of hostilities for auxiliary units to be embodied and brought up to the standard necessary to enable them to take their place alongside regular units. It is, therefore, essential that steps be taken either to ensure that in peace time auxiliary forces are fully equipped and trained for combat or to see the role previously allotted to them is suitably modified. The former would for all practical purposes be tantamount to placing auxiliary forces on the same basis as regular troops.

ROTATION

In the existing state of relations with China and Pakistan, it will be necessary for a large number of regular units to be constantly deployed in hospitable border regions. It would be unrealistic to expect the same troops to face these hardships year after year. A number of regular units must, therefore, be periodically posted to peace stations where they can be rested, re-equipped, re-trained and, if necessary, employed on internal security or garrison duties. These units, and not auxiliary forces, would be the most appropriate reinforcements for the field army, particularly in a short war.

Fighting against a well-equipped and trained enemy, particularly in jungle and mountainous terrain on our eastern and northern border regions, can only be successfully undertaken by tough seasoned troops. With the rapid development of new weapons, equipment and combat techniques, war has become a highly technical affair, best undertaken by highly trained regular troops rather than by partially trained auxiliaries. The fact that there have been successful campaigns conducted by irregular troops, such as the Yugoslav Partisans, does not disprove the validity of this general rule.

An obvious conclusion that emerges is that combat operations must be excluded from the role allotted to auxiliary forces and left to regular troops. A logical corollary to this is that, in general the role of auxiliary forces must be to facilitate the maximum number of regular units being moved into and maintained in the combat zone or zones. This would involve auxiliary forces being prepared in an emergency to:

- (a) take over all internal security and garrison duties;

- (b) ensure that services essential to the prosecution of war are efficiently maintained; and
- (c) provide certain additional technical units, particularly in the field of transportation.

ROLE IN PEACE

In the past too much stress was laid on the war-time combat role of auxiliary forces, particularly the territorial army. The employment of these units in peace was not only insufficiently stressed but was in fact completely ignored. Whilst this policy might have been appropriate for the British Raj in India, it certainly is completely unsuited to the requirements of Independent India.

Maximum advantage from the money and effort devoted to auxiliary forces must be extracted not only in war but also in times of peace. It must be remembered that it is possible that war may never come whereas we are already engaged in a battle of national development to raise the general standard of living of our people. Success in this battle will considerably brighten our chances of victory in a future war, and failure in our development plans will make us correspondingly more prone to domination by a foreign power or powers.

Without in any way sacrificing our democratic ideals or subscribing to Communism, we can profit by studying China's employment of militia units as distinct from her regular or People's Liberation Army. In China the militia appears to be all-pervading; the authorities apparently aim at recruiting one member from every family into the militia. In addition to supplementing the regular army, the Chinese militia is employed on a variety of peace-time tasks, such as road-building, farming, organising public health and sanitation, and even running schools in border regions. The militia also plays a very important part in building up patriotic spirit and gaining public support for Government or party policies. Militia men are regularly indoctrinated with the latest official line and are instructed to propagate this line amongst their families and neighbours.

In the great battle for national development, India is faced with gigantic problems, not least among which is a sense of public apathy and lack of discipline and national unity. All these would be a crippling handicap in war. Individual members of the auxiliary forces must take a leading role in raising national morale and inculcating in the public a sense of discipline, patriotism and unity. Auxiliary servicemen are ideally suited for this task. They must, however, be carefully instructed and imbued with enthusiasm. The terms 'propaganda' and 'indoctrination' have acquired a somewhat unpleasant totalitarian odour, and many people, particularly those brought up in the British tradition, tend to shy away from anything connected with them. This tendency is an anachronism and must be eradicated. As the prospects of physical domination diminish, so the battle becomes more and more one to win over men's minds. No good Commander would think of committing his troops to battle without ensuring that his subordinates know his outline plan and properly understand the task allotted to their particular unit or sub-unit. It is equally important that every serviceman and in fact every citizen of India should be made to understand all facets of the national plan and the part he is required to play. Servicemen must also be trained and encouraged to vigorously propagate among the public the message of esprit de corps, loyalty, discipline and unity.

LOK SAHAYAK SENA

The Lok Sahayak Sena was started in 1955 with the aim of imparting basic military training and instilling a sense of discipline, responsibility and self-reliance in as many citizens of India as possible and to create among them a desire for national service. This was undoubtedly a much-needed step in the right direction. Now that the Lok Sahayak Sena has been in existence for five years and over 5,40,000 volunteers have completed the training given in the Sena's Camps located throughout India, it is necessary to evaluate the results and to decide if the success achieved is compatible with the money and energy expended or whether better results could have been obtained by employing these resources differently to achieve the desired aim. This writer maintains that, bearing in mind the general standard of trainees and the background from which they come and to which they return, one isolated period of one or two months training, without any follow-up or continuation of association with the organisation giving the training, is inadequate significantly to raise the general standard of discipline and self-reliance. A sense of permanency and pride in belonging to a distinguished organisation are the bedrock of esprit de corps which is perhaps the most important single factor in building up morale and discipline. It is considered that if the vast effort devoted to the Lok Sahayak Sena had been employed to increasing the number of auxiliary units and to reorientation this force to the needs of our country, better and more lasting results would have been achieved, particularly if every effort was made to closely associate each auxiliary unit with the day-to-day life of the community in its area.

During British rule the policy was to isolate the forces from the public. This has to a great degree been reversed since independence, but there is still much to be done to identify the forces with the people. This will work to the mutual benefit of the forces and the general public. Regular forces have of necessity to live in barracks and being fully occupied with their professional duties their contacts with the public are somewhat limited. Auxiliary forces live and work with other civilians, and are in a better position to influence public opinion.

Both regular and auxiliary forces can and must render assistance in times of emergency such as floods, drought and epidemics and also in contingencies such as failure of essential services whether due to strike or other causes. There is, however, a danger of the public at times becoming too dependent on the Services. Care must be taken to ensure that auxiliary and regular units render assistance where required but do not entirely take upon themselves work which is basically a local civilian responsibility.

TYPES OF UNITS

During World War II it was found necessary to have, in addition to the territorial army, a large variety of other auxiliary units such as Garrison Coys, Home Guards, Fire Watchers, Civil Defence, and Women's Auxiliary Corps for the Army, Navy and Air Force. These units were built up on an ad hoc basis during the period, sometimes termed the 'Phoney War', that intervened between the overrunning of Poland by Germany and the blitzkrieg attack on the Low Countries and France. It is unlikely that there will be a similar opportunity for building up forces in any future war. Consequently, it is essential that all the auxiliary forces likely to be needed in the event of war are recruited and trained as soon as possible. The most economical and efficient way of

achieving this would be to amalgamate all auxiliary forces into one homogeneous corps, which, broadly speaking, would have four types of units, namely:

- (a) General Duties Units;
- (b) Specialist Units for manning particular essential services;
- (c) Additional Specialist Units;
- (d) Women Auxiliary Force.

GENERAL DUTIES UNITS

These, as their name implies, would be the general 'dogsbody' of the auxiliary corps and, in addition to performing internal security and garrison duties, would be responsible for functions performed by Home Guards, Fire Watchers, Civil Defence elements, etc. These units would have to be capable of successfully dealing with armed enemy agents within the country or those that infiltrate or get airdropped into the area. Generally speaking, it would be sufficient for these units to be armed with rifles/pistols and a proportion of machine carbines. Special units specifically earmarked for the defence of important vulnerable points, such as airfields, would probably require additional arms in the form of light or medium machine-guns and perhaps mortars. With the development of anti-aircraft missiles which are simple to operate, the responsibility for anti-aircraft protection of cities and other vulnerable points in rear areas should increasingly be transferred to auxiliary forces. As General Duty Units would be basically required to operate in a specific area, they would not necessarily have to be fully mobile. Some elements would, however, require to be mobile to meet emergencies in their own area and to give support when necessary to neighboring sectors. In order not to unnecessarily tie down a large number of expensive vehicles, plans should be evolved to commandeer or otherwise have available an adequate amount of civilian transport for use when the necessity arises. Although the majority of these units would be designed to operate in their own home areas, a certain number would also have to be organised for employment away from their home towns.

There should be two different types of General Duties Units—Urban and Rural. In the past the emphasis has almost wholly been on the former. This has perhaps been due to comparative ease of recruitment and administration in urban areas. In future much greater emphasis will have to be laid on raising auxiliary units in rural areas, particularly in border regions and along lines of communication. The correct criterion should be the necessity for auxiliary forces in a particular area and not merely the availability of recruits. In sparsely populated areas it may, in times of emergency, be necessary to induct auxiliary units from other parts of the country. A large number of urban units will of course still be required to protect vulnerable points and organise civil defence.

ESSENTIAL SERVICE

If essential services cease to function or function inefficiently it will seriously hamper the national war effort. Civilian workers who are not subject to military law may absent themselves, either due to a strike or perhaps from fear of bombing or other enemy action. Special auxiliary units must be maintained to meet such emergencies. The need for these units is greater in a country such as ours where our public tends to be much less disciplined and more prone to panic.

Some of the types of services whose proper functioning must be ensured are:

- (a) electricity, gas, water and sewage services;
- (b) road, rail and water transport, including movement of stores and personnel through docks;
- (c) health services and food distribution; and
- (d) telephone, telegraph and postal services.

The bulk of the officers and men for these units should, wherever possible, be recruited from people actually performing similar duties in civil life. This would not only ensure that recruits have a good deal of the required knowledge/skill, thereby saving on training effort, but the presence of these elements in the civilian organisation should also, if properly exploited, prove to be a valuable factor in improving stability and discipline amongst the other civilian workers.

SPECIALIST UNITS

When large forces have to operate in under-developed areas or in areas seriously damaged by enemy action, it would probably be necessary to supplement regular engineer units with specialist auxiliary units such as Railway Construction and Operation Units, or perhaps Inland Transport Units, or even Road Construction and Pioneer Units. Auxiliary Units earmarked for this purpose must be prepared to operate wherever needed. These units would require a high degree of training.

WOMEN'S UNITS

In the more advanced nations, manpower shortage poses a difficult problem, and women are taking on an increasing number of tasks in both peace and war. In our country, the manpower problem is not so acute, and it is only in a few cities that women have in recent years started working in offices, shops, restaurants, etc. Care must, therefore, be taken in allotting to women's auxiliary units tasks suitable to the special conditions prevalent in India. Generally speaking, tasks for which women are best suited are secretarial/clerical duties, and for employment as telephone, telegraph and wireless and cipher operators and in particular for the medical and nursing services.

RECRUITMENT AND ORGANISATION

Recruiting of suitable persons for auxiliary units presents a formidable problem. If a reasonable standard of efficiency is to be maintained, all auxiliary unit personnel must undergo a few hours training every week. They must also at least once a year spend two to four weeks on collective training as a whole unit. A large number of employers are more immediately concerned with getting the maximum amount of work from their employees, rather than with the long-term benefits accruing from the nation having efficient auxiliary forces. Consequently, employers tend to discourage their workers from joining auxiliary forces and regularly attending training parades. This could, to a certain extent, be overcome by giving incentives, say in the form of tax concession for companies in which a certain percentage of workers are regular members of auxiliary forces. However, really satisfactory results will only be achieved when all concerned fully appreciate the importance of auxiliary forces and are prepared to make some personal contribution to the national cause. In

the ultimate analysis, a nation can only preserve its independence if its nationals have the will to make sacrifices in the common cause. Persistent efforts must be made to identify the public at all levels with the armed forces, particularly the auxiliary units. The emoluments that the nation can afford to pay members of the auxiliary forces are not by themselves sufficient inducement to get the necessary number of volunteers of the calibre required. In addition to appealing to patriotic sentiments, some further inducement is essential, particularly in the initial period. The inducements need not be financial. If the prestige of the auxiliary servicemen is built up and pride in their service inculcated and smart uniforms provided, recruitment would receive substantial fillip. Every good labourer is worthy of his hire and a nation must adequately recognise the importance of the work of members of the regular and auxiliary forces.

It is desirable from the point of view of recruiting, as well as from considerations of economy and efficiency, for auxiliary units to be employed as far as possible in the areas from which they are recruited. Auxiliary forces should therefore be organised on a regional basis. Urban units should be organised on a four to six company battalion basis, where possible each company being recruited from a particular sector of the town. In the case of rural units, a platoon based on each large village would appear to be the answer. These platoons should be grouped into independent companies under the overall control of battalion headquarters suitably located in the area.

It would not be necessary to have separate brigade or divisional headquarters. Auxiliary units must function within the overall military plan. As such, it would be best for them to come under the command of the local sub-area. The only drawback is that some sub-area staffs are already overburdened and might tend to neglect the auxiliary units. In such cases it would be necessary to introduce additional sub-areas or a separate auxiliary forces group headquarters.

Essential services units and additional specialist units would have to be organised in the manner most appropriate to their particular role—for example, Railway Construction Battalions or Dock Operating Coys.

In each town or village there should be an auxiliary unit/sub-unit headquarter, the location of which must be generally known. These headquarters need not be elaborate, and in the case of villages or small towns could be the residence or place of work of the local Commander.

Everything possible must be done to get suitable officers for the auxiliary corps, the correct criterion being ability and enthusiasm for the job and not merely the local importance of the individual concerned. As a general rule, all platoon and company commanders must be auxiliary officers. Where suitable auxiliaries are available, they should also command battalions. It would be desirable for each battalion to have at least one regular officer who could perform the functions of Adjutant and Quartermaster and also perhaps generally advise on weapon and tactical training.

The keynote to efficiency in auxiliary forces must rest on the enthusiasm and devotion to duty of the members, particularly NCOs and officers. The highest standards must be aimed at; quality must not, as is too often done, be sacrificed for quantity. Large numbers of inefficient and unenthusiastic auxiliaries would do more harm than good to the force.

CONCLUSION

Auxiliary forces have a vital role to play in our National Plan in both war and peace. However, our present concepts, which we inherited from the British, are outmoded. A reorientation of ideas, particularly regarding the employment of auxiliary forces in peace, is an urgent necessity.

Whilst auxiliary forces are primarily intended to supplement regular troops in war time, they can and must be gainfully used in peace, for example, in building up morale and discipline in the general public and in rendering assistance when necessary in emergencies such as floods and other calamities and where considered appropriate during any breakdown of essential services, whether due to strikes, lockouts or other causes.

Auxiliary forces must be organised on a regional basis and must intimately associate themselves with the citizens of their areas. More emphasis than in the past must be placed on rural areas, particularly in our border regions and along our lines of communication.

The vital importance to the nation of having adequate and efficient auxiliary forces must be publicly recognised. Every effort should be made to enhance the prestige of these forces to induce the right type of volunteers to join, particularly in the Officer and NCC cadres. As the emoluments of auxiliary servicemen will be comparatively low, the motivating force must be enthusiasm and devotion to service of the nation.

THE HIMALAYA FRONTIER FORCE

Lieut.-Colonel M. R. P. VARMA

FOR us today there is no greater challenge than that of securing for all time our long Himalayan border. The incursions across our border have given rise in many of us to a rigid determination to press forward and to remain forward no matter what hardship and sacrifices may be involved. I call such an exercise of individual and national will "the Frontier Spirit." It has characterised every nation on the march to progress, self-respect and the achievement of true greatness in the comity of nations.

This Frontier Spirit is to be seen in many different forms according to national circumstances. It is, for instance, the Karmayoga of the Bhagavad Gita. In more barbaric times, when foreign conquest and colonialism were not seen to be evil, the same spirit of adventure brought Alexander to the Sutlej and carried the Romans forward to Britain. It carried one of our cultural patterns across the oceans to Java and Bali as well as to Angkor Vat where they took root and flowered in their own individual way. Coming to more modern times, we are familiar with the American invocation of the 18th and 19th centuries: "Go West, young man!" In this spirit the Americans have gone as far West as Hawaii while Alaska in the Frozen North has become the 50th State of the Union. In Canada, the lure was the Hudson Bay Company and the search for the North-West Passage—found at last through the voyage of the first atomic submarine, the Nautilus. In the case of the Russians, the same spirit carried them South, East and North to Bokhara, Samarkhand, Magnitorsk and Arctic Siberia, and now to Outer Space. The British at first lay in the paths of adventures, like the Romans, the Vikings and the Normans, but over the centuries they absorbed all invaders and eventually evolved a frontier spirit of their own that carried them to the ends of the earth. Clive, humble clerk of the John Company, was so strongly imbued with this frontier spirit that he rose to generalship and has gone down in history as a main instrument of early British Imperialism in India although he started off as a mere 'Bania's babu'. As the British grip over the Indian subcontinent strengthened, the more adventurous were attracted to the frontiers, mostly the North-West Frontier, since this was one of the foci of 19th Century diplomacy and strategy. The few Englishmen who went North met with little encouragement and often did not return. Such a man was William Moorcroft, who was murdered. An extraordinary personality, he was so much in advance of his time as to be unacceptable and therefore he failed. Another celebrated personality whose success was publicly disowned was Sir Francis Younghusband, whose march on Lhasa in 1903-04, if it had been consolidated, might have left Tibet today at least as strong as Nepal. But in those far-off days the Himalayas seemed sufficient barrier while the anarchy that raged throughout China gave no hint of a potential world power.

Today, the call to adventure comes from our snow-clad Himalayas to the North and the thick jungles of the East. And who would not be there today instead of in the air-conditioned stuffiness of Delhi offices?

PARTITION AND AFTER

The frontier spirit of the pre-1947 Indian Army suffered a severe setback as a consequence of the partition of India, including the armed forces. Not only were regiments divided but in many cases battalions, and as a geographical consequence both the frontier region and most of the frontier units of old

were lost to us. What was this spirit of the frontier that had inspired so many of the finest officers of the old regime?

In its intangible form it was the reaching out of the human mind and the will to prevail over all difficulties that has characterised all human activity since the dawn of history. In more definite terms, it was the vision and endeavour of men like Sir Henry Lawrence, Lieutenant, later Lieutenant General Harry Lumsden of Guides fame, Coke of the Punjabis, Hodson and Probyn and Skinner, Sir Olaf Caroe and many others whose strength of will is to be measured not by the ranks or awards they attained but by the perpetuation of their names not merely in a particular regiment but as a household word in many humble homes in the areas where they operated or from where their recruits came.

Part of the old frontier tradition was handed down to us in 1947 when elements of the Punjab Irregular Frontier Force became part of the new Indian Army. Fine battalions and units like the 5th Gorkhas, Punjabis and Mountain Artillery came complete. In other cases only elements came such as the Frontier Force Dogras who were formed into the 9th Battalion of the Dogra Regiment and became the highly regarded motor battalion of the Armoured Division. However, despite the amalgamations of the Frontier Force Regiment and the Frontier Force Rifles the need to maintain their frontier traditions was not seen nor was it very self-evident at the time. Today, that need has again arisen. Let us examine some of those traditions and then relate them to the present situation.

This is what Sir Olaf Caroe has to say about the Guides: "... the Guides cannot be passed by, they are of the warp and woof of the Frontier fabric. Harry Lumsden, their Commandant until 1862 (they were raised in 1846) ... over the Guides the influence of Lumsden still burns bright and clear. To be alert and ready; to rise equal to the occasion, be the call small or great; to be not easily taken aback in a sudden emergency; to be a genial comrade and a good sportsman ... straight, clean, manly dealing."¹

WHY THE GUIDES?

The reason why Sir Henry Lawrence authorised the raising of the Guides, and later the Piffers, should be carefully examined in the context of similar problems today: "The defence of the frontier from Huzura to Mithunkote, at the junction of the five rivers, was a heavy task to face. It meant the control of lawless tribes, whose trade was warfare and plunder, numbering in all not less than 100,000 fighting men ... in a country so difficult for military operations ... marauders assembled from long distances well armed and well mounted and carrying their food on their backs. Sir Henry (Lawrence), during the first Afghan War, had seen the difficulties of our army, British and (Indian), encountered in the passes amongst the hill tribes ... *in the absence of guides and interpreters* and he resolved that in future, *within our own ranks*, there should be hardy men accustomed to every region and accident of service and familiar with every village dialect. ... The Guides were raised by then Lieutenant Lumsden. ... Henry Lawrence quickly gauged Lumsden's genius. ... Each man's personal history was known to Lumsden ... men from every wild and warlike tribe were represented in its ranks ... speaking all the tongues of the border ... (knowing) dialects unknown to the men of the plains."²

This is what Lieutenant Lumsden wrote to his father: "(I have been) nominated (by Sir Henry Lawrence) to raise the Corps of Guides (1848). It

1. The Pathans, Sir Olaf Caroe, Macmillan, 1958.

2. Lecture at the Royal United Service Institution, 1884.

will be the finest appointment in the country being the right-hand of the army and the left of the political (set-up). I am to have the making of this new regiment all to myself. The arming and dressing is to be according to my own fancy. They are for general service."¹

It should be noted that at the time Lumsden was 27 years of age and had about ten years service. Under present-day conditions he would have been an acting Major. The strength of his force was 250, which enabled his personal selection of every individual—good seed. Subsequently his establishment was raised as the success of the force proved its worth.

Lumsden's recruiting methods might not meet the approval of present-day directives. Lumsden sought out the men noted for notorious deeds, convinced them that conditions for brigandry were on the decline and then made Guides of them. Such a Guide was Dilawur Khan who, subsequently and through inept selection and staff work, was sent on an impossible mission against all Guide principles and died as a result.²

Lumsden, before raising his Guides, had been in charge of a body of Sikh levies. He noted that "each man carried seven days supply on his back instead of his knapsack, and fills his store up whenever he can, never expending a seer but when driven to it." This was the secret of the mobility of the Guides.

INTELLIGENCE

Before moving on again to present times let us note one or two other points about the handling of frontier problems in those days. Lumsden, in addition to being Commandant of the Guides, was also a Political Officer at the same time; he wore two hats. Previously, in the Assam Rifles, the Commandant acted as Political Officer or Deputy Commissioner in the absence of the civil officer. This practice has been discontinued for no good reason and usually with adverse effects, especially where co-operation and mutual respect are concerned. Another pungent comment by Lumsden on intelligence is well worth bearing in mind today—

"During every campaign . . . the want of good intelligence has been felt keenly and several spasmodic attempts have been made to supply the deficiency by some of the most energetic officers in the country only to break down before the inexorable shears of the . . . economists who have never been able to look beyond the exigencies of the next budget. Such an organisation (i.e., the Guides) secures a political influence of inestimable value and produces a closer connection than is in any other way attainable. . . Importance of cordial co-operation of the Chiefs of our own tribes . . . they alone can furnish reliable guides and information . . . men should be taught to look upon them as friends . . . (give the Chiefs) high rewards for faithful services with prompt and uncompromising punishment for deceit."³

In most cases where we have been disappointed in our raising of militia, irregulars or other levies, the reason will be found in not following one or more of the principles enunciated by Lumsden and his 'tribe' of frontiersmen. Some of the mistakes made have since become apparent. The time-consuming longer way of tact is usually the only course left open to the objective observer who wishes to be effective. But to convey the potential strength of

1. Biography of Lt. General Sir Harry B Lumsden, John Murray, 1899.

2. Ibid.

3. Ibid.

irregular forces and the frustrations that have, and always will, bedevil their protagonists, there is no better example than the contribution made to Allenby's Palestine Campaign and to the history of irregular warfare by T. E. Lawrence who guided the Arab nationalist movement. He made it an effective means of conducting operations against the Turks in furtherance of Allenby's plans and at the same time propounded a theory of irregular warfare that increases in value as the destructive power of modern weapons and total war doctrines mount up and threaten to overwhelm more conventional concepts of war.

LAWRENCE'S THEORY

The potential and value of the Arab irregular force under Feisal with T. E. Lawrence as his trusted political and military adviser was not realised until Allenby arrived to take over command of the theatre. As people like Liddell Hart, Robert Graves and Lawrence himself have commented, there were few officers who could learn and understand the difference between irregular fighting and modern war and keep the two going without confusion. There are all too many types of 'official mind' who would rather die—or let others die—through ignorance rather than accept the validity of information from irregular, unofficial sources or, put more mildly, most of us prefer to play safe. Of course, Allenby enjoyed one great advantage in supporting Lawrence: the Arabs and Arabia were well to a flank so that while Lawrence's grand design might well further Allied aims it would not, if it misfired, greatly endanger Allenby's strategy. Nevertheless, a lesser man than Allenby would have failed to exploit the strength that was realised through Feisal, Lawrence and the Arabs.

The strength of the Arab irregular force lay in its strategic mobility, the ability to move long distances at short notice, with no problems over feeding themselves. They had the advantage of unlimited space with no vital point to cover. The virtue of the irregulars lay in their depth and not their concentration at any point. This is how Lawrence described his theory of irregular warfare—

"A company of trained Turks could defeat a thousand Arabs in open fighting, yet three or four Arabs in their own hills could hold up a dozen Turks . . . (Regular forces) command and strategy dealt with known variable, fixed conditions, space and time, hills, climate, and railways, with masses . . . Suppose we (Irregular forces) were an influence . . . an idea, a thing invulnerable, intangible, without front or back, drifting about like gas . . . a regular soldier might be helpless without a target . . . a war of detachment . . . the silent threat of the vast unknown . . . our cards were speed and time, not hitting power . . . (irregular forces must) cover all the possible approaches . . . not by a series of inter-dependent posts but by . . . independent ones sited in places as near as possible impregnable by nature and each menacing the enemy's rear so that, while not one could be easily taken, none could be neglected. . . . I knew my ground, my material and my allies. If I met 50 checks, I could see a 51st way to my (irregular) object . . . I dared not weary myself over . . . loads of rice and flour . . . each man was self-contained. This gave us a range of 1,000 miles (under desert conditions mounted on camels given in part by Allenby) . . . we could not use the men of one tribe in the territory of another (a limitation of such forces) . . . the bodyguard served . . . not merely as personal protection but as the core of the force with which he (Feisal) made his mobile thrusts (similar to Rommel's HQ in

the North African desert) . . . the one ambition that survived was to be held in respect by men . . . range is more to strategy than force. . ."¹

HIMALAYAN FORCE

Lumsden and Lawrence were only two men in whom the frontier spirit burned strong with a clear flame. There are many other examples. The resistance of the Yugoslav Army to Hitler's occupying armies was conducted entirely on partisan lines and the theory of irregular warfare. The Yugoslav leader of the 1960 Himalayan Expedition had been an Infantry Lieutenant Colonel in this partisan army. Commenting on the Himalaya, this war veteran and tough mountaineer remarked drily: "This terrain (the Himalaya) cannot be held by regular forces."

I have stated above, through the experience of others in comparable circumstances, the case for a more flexible body of men to patrol our Himalayan approaches than can be provided through regular forces. What shape and form should such a corps of frontier guides or a Himalayan frontier force take?

All along the Himalayan border the conditions of operation, difficulties confronting regular forces, the attitude of the local people and each and every other factor that you may consider lead to the same initial conclusion that the covering troops and first line of defence should be organised on a Scout and Guide basis with reinforcements of the Frontier Force (Piffer) type and that such forces, in addition to their economy in peace, will permit the successful handling of regular forces in mass to deal with an enemy that has already been outmanoeuvred, outwitted, harassed, deceived and surprised by the lighter skirmishers in the form of the Himalayan Frontier Force with its corps of frontier guides.

The force should have small beginnings in each and every tribe or people all along the border. Small beginnings are essential; otherwise bad seed will be taken in with the good, and the resultant crops will go from bad to worse. That was the secret of Lumsden's success and it should not be forgotten. We need to search out our Lumsdens: they are there all right and in adequate numbers.

ADVERSE CONDITIONS

The officers who are to raise these various Himalayan corps should be youngish Lt.-Colonels or Majors and Captains. To start with, every one of them should be able to march 20 or 30 miles a day for a week or so without feeling it—below 9,000 feet of course. He must be able to make 40 miles in a single day if he has to. Can he live off the land? As I found to my horror and cost, this implies swallowing a lot of one's beliefs when your host offers you dog, snake and other forbidden flesh. Can he remain cheerful and humorous under such adverse conditions? I am not sure that I did—but I put on a good stage act! Not every good officer measures up to the yardstick of the Guides. He should have the capacity, like T. E. Lawrence of Arabia, of prevailing over men and circumstances whatever the conditions. In the words of Lawrence: "... I drew these tides of men into my hands and wrote my will across the sky in stars."

1. See T. E. Lawrence by B. Liddell Hart, Cape, 1934 and Seven Pillars of Wisdom by T. E. Lawrence, Cape, Reprint 1946.
2. T. E. Lawrence, *op. cit.*

Unorthodox warriors get short shrift in peace.¹ Unless there are compelling reasons for irregular forces, they will not be raised. Those reasons exist today and cannot be expressed in better words than those used by Sir Olaf Caroe about Lumsden's Guides and other famous units like the Tochi Scouts, the Gilgit Scouts and others: "... regular troops alone would not suffice. The force (must include) trustworthy local men to act as the ears and eyes of regular troops in the field."

I believe that the incipient frontier spirit will soon flare up with a stronger, cleaner fire than ever before. One of the ways in which it will be seen will be in the Himalayan Frontier Force. Notwithstanding nuclear warfare—which reinforces the theory of irregular warfare, if anything—it will be written in a hundred years from now that the continued tradition and excellence of many fine Indian Army regiments will date from the time they become part of the HFF, the Himalayan Frontier Force. But let future military historians be the judge of this.

What of the present? We must encourage this spirit and certainly we should cease to curb it or draw rein on it. Today the call of adventure lies along our Northern and North-Eastern frontiers. It has been my purpose in this article to draw attention to the frontier pioneering spirit needed to meet this challenge and to suggest the best way that this spirit—which is abundant—may be given its expression, namely, the formation of a Himalayan Frontier Force which will include its own corps of Guides and also Scout type units.

1. See Peter Fleming's lecture to the Royal United Service Institution reproduced in the February, 1960, issue of the Journal.

INDIAN AVIATION INDUSTRY

A Comparative Study

By Flight Lieutenant K. S. TRIPATHI

THE growth of aviation industry in the countries of the West has been primarily due to their military requirements. The two World Wars and the emergence of the United States and the Soviet Union as rivals in the post-World War II period, gave it a tremendous impetus. The development of nuclear weapons also made an urgent call on aviation engineers to design and develop better and faster means of delivery.

The Indian aviation industry, though quite young, has a favourable climate for rapid growth. The motivations and stimuli which have nourished this industry in the West are, by a strange combination of forces, present in our country too. Though a peaceful country wedded to Panchsheel, India has recently been rudely disillusioned by the unpredictable behaviour of some of her neighbours. The explosive situation on our borders calls for a determined effort to build up our military power independently. The dark clouds have silver linings too, for Chinese aggression and Pakistani hostility have injected new determination and enthusiasm in the Indian people to defend the territorial integrity of the nation at all costs.

NEW ERA

1961 will go down in the annals of the Indian aviation industry as an important landmark. It was in this year that the inaugural flights of the HF-24 and the Avro-748 took place. The first Indian jet engine, Orpheus 701, was also manufactured in 1961. The manufacture of these aircraft and engines marks the beginning of a new chapter in Indian aviation. The period of infancy is over. Indian aeronautical engineers have acquitted themselves creditably and have proved that, given facilities, they can equal the best in the world. Speaking on the occasion of the successful test flight of the HF-24 at Bangalore, Defence Minister V. K. K. Menon said: "The HF-24 is one of the best of its kind in the world, and we are proud we built it". The Chief of the Air Staff, Air Marshal A. M. Engineer, described the occasion as "historically noteworthy and important for India's aviation industry". A few months later, when the Avro-748 made its first public appearance at Palam airfield, the Defence Minister said: "For us in India the building of the Avro-748 is not just making an aeroplane, but a great landmark in our national and technical progress." The Prime Minister observed that the achievement was a promise for the future not only for the Indian Air Force, but for the nation.

It would, however, be a grave mistake to exaggerate the importance of these events. India still has a long way to go to attain self-sufficiency and to make itself felt in the field of aviation industry. Our late start is in a way a blessing, for we have the example and experience of many pioneers to follow and to benefit from.

CURRENT TRENDS

The recent development of missiles, rockets and earth satellites brought about an overwhelming crisis in the field of aviation industry. Aircraft which till yesterday held a dominant place in the modern system of defence and

offence, came to be considered obsolete. Hasty speculations almost changed the pattern of the aviation industry, but the storm appears to have passed, at least temporarily, and the industry is slowly regaining its poise. Though the emergence of missiles has thoroughly shaken up the industry, gradually it is becoming clear that this has not radically changed the position.

The Soviet Union's air display at Tushino on July 13, 1961, forcefully reiterated the role of conventional bombers and fighters in modern defence. While maintaining its lead in rocketry, the Soviet Union did not relegate conventional aircraft to the background, although it was repeatedly announced that ballistic missiles would replace manned bombers. Many old and new generations of fighters and bombers made their appearance at the air display which shocked and intrigued American and English observers. The most fantastic was a huge delta-winged supersonic bomber powered by only four jet engines—two below the wings and two at the tips. According to the observers, this aircraft was larger than the American B-52 eight-jet bomber. It was escorted during the fly-past by supersonic fighters of similar wing design.

IN THE U.S.A.

During a period of confused thinking, culminating in the presentation of the British White Paper on Defence in 1957, military strategists in the West thought manned aircraft had had their day. Programmes for many advanced supersonic bombers and fighters were abandoned half-way through. Projects for missiles and rockets were speedily undertaken with a view to commissioning them into service and filling the void created by the discontinuance in production of long-range bombers. By 1960 the production of manned aircraft had touched an all-time low in the U.S.A. due to rescission of the famous Century series of supersonic fighters and North America's prestige production, the 2,000 mph B-70 Valkyries. The purchase of manned aircraft was slashed from 9,000 in 1953 to a mere 1,500 in 1961. Conversely, the expenditure on missiles, rockets and allied research soared 600%, from 1 billion dollars to 7 billion dollars.

This change in emphasis from aircraft to missiles brought disastrous losses to many aircraft companies. Republican Aviation, which stubbornly stuck to aircraft production and currently banks on its production of F-105 fighter bomber for 98% of its business, passed through some anxious days when the sales came crashing down—from 547 million dollars in 1955 to 215 million dollars in 1960. Companies which slipped into the commercial jet market to avoid disaster did not succeed in averting lean days. Boeing, Douglas and Convair spent about 700 million dollars to develop their big jet commercial aircraft, and only Boeing is in sight of avoiding the crisis. It is interesting to note that the well-known Glenn L. Martin Co. completely abandoned its air-frame business and, among other business experiments, took to such purely civilian products as cement.

The Kennedy Administration, however, gave a new lease of life to manned aircraft and revived the B-70 programme. President Kennedy also instituted a special inquiry to assess the relative bomber strength of the U.S.S.R. and the U.S.A. The inquiry committee will probably succeed in restoring manned aircraft to their glory.

BRITISH AVIATION

Since the introduction of the Government-sponsored programme of amalgamation, more than a year and a half back, the British aviation industry has assumed a streamlined shape. Internal competition and duplication of effort have been eliminated. The new groupings are working excellently and with no visible signs of friction. However, the British industry is still recuperating from the malignant effects of the Duncan Sandys White Paper of 1957. This is apparent from the export figures for 1959 and 1961. During 1959, when many pending orders were cleared, exports by the aviation industry attained a record figure of £156 million, but during 1960 the full impact of the White Paper was felt when the export figures came down to £142 million. Although the estimate for 1961 shows a healthy improvement, it should be borne in mind that it covers the delivery of aircraft ordered some time ago and which are likely to be completed before the end of the year.

Hardly had the British industry surmounted one crisis than it was faced with another. The dominant impression gathered at the 22nd annual flying display of 1961 of the Society of British Aircraft Constructors, at Farnborough, was that the industry must soon decide whether or not to expand outside the United Kingdom, primarily in Europe, and thereby join with European manufacturers in design and production of new aircraft and engines beyond licence agreements. The members of S.B.A.C. strongly felt that the British industry had to move into co-operative manufacturing and sales agreements in Europe at the earliest time, to avoid being reduced to the status of a component-manufacturing industry.

In addition, the British industry at present faces vigorous competition from the U.S.A., France, Canada and Holland. In the field of civil aircraft production, the British manufacturer has primarily to cater for the needs of the long-distance airline BOAC, as there is no domestic market for short-range aircraft. The aircraft produced for the BOAC are uneconomical and altogether unsuitable for smaller routes. The current project of the Vickers VC 10 is admirably suited to the long-distance routes and would present a tough challenge to similar projects in the U.S.A. and other countries, but the British industry's enormous problem is that it has to tailor its manufacture to the specifications of a particular carrier. This narrows down its market prospects. However, the Armstrong Whitworth Argosy freighter has the rare distinction of breaking into the American market in recent years. This freighter has achieved a daily utilisation rate of 13 hours. Its excellent and economical performance has brightened its prospects.

In the military field, though the picture is not rosy on the whole, yet the most heartening aspect is Britain's world-wide lead in developing VTOL engines; with Rolls-Royce and Bristol Siddeley products dominant in strike-fighter competitions. There is a bright chance of Britain finding in the NATO a big customer. If this happens, it will result in possibly the biggest plum for the British aviation industry over the next several years.

In general, however, the setback suffered due to the Government policy, as highlighted by the White Paper of 1957, has not yet been offset. The 1961 Farnborough show tended to accentuate the gap between the last generation of aircraft and the appearance of the new projects. The individual companies are painfully overcoming the delays arising from the change of accent from manned aircraft to missiles. The pendulum has now swung the opposite way and at present the missile industry is faced with neglect.

IN THE U.S.S.R.

Ever since Mr. Khrushchev's crisp remark in 1957 that manned bombers could be put in museums as relics of bygone days, many aviation experts in the West tended to believe that the Soviet Union was turning slowly to rockets for offence and defence. His remark was backed by spectacular Soviet successes in space flight. When finally the Russians put Major Gagarin into space in April 1961, the belief in the West was confirmed that the Soviet Union had almost renounced her conventional aircraft programme and was concentrating on space-flight and conquest of the moon.

Coming in the wake of such a remarkable lead in space-flight, the Tushino display was an unmixed shock to Western observers. Later, at the Farnborough show, Russian designers Sergei M. Ilyushin and O. K. Antonov, who visited the show as guests of the SBAC, observed that they saw no end to the need for manned military aircraft in the "near future". They were confirming the trend at the Tushino display where the E-66, a Mikoyan-designed delta interceptor, claimed world speed and altitude records of 1,335 mph and 112,294 ft.

While the Khrushchev remark brought sweeping changes in the pattern of Western aviation industry, the Soviet Government did not lose sight of the utility of manned military aircraft. There may be many more surprises up the sleeves of Russian designers. The secrecy with which the Soviet Union was developing its new fleet of military aircraft, while putting up a show of space-success, has taken people completely by surprise. The delta interceptor E-66 remained a mystery till Ilyushin and Antonov disclosed at the SBAC show that it was a Mikoyan-design.

SPACE RESEARCH

Even though manned military aircraft may stay for an indefinite length of time, greater attention will be claimed by the space programme which, both in the U.S.A. and the Soviet Union, is primarily a military goal. The rivalry between the two nations has stepped up the space programme to fever pitch.

Dr. G. A. Tokaty, former Soviet rocket specialist, who sought asylum in London in 1947 and who is now working as the Head of the Department of Aeronautics and Space Technology, Northampton College of Advanced Technology, London, recently described the progress of Soviet rocketry and astronautics at the British Interplanetary Society in London, in the following words: "I am in no doubt whatever that no other government has contributed to the growth of space technology as effectively as the Government of the U.S.S.R. They made up their minds a long time ago. . . . They have never been reluctant to provide the necessary sums of money and supporting facilities."

After surveying the work of such pioneer Russian scientists as Tsiolkovsky, Konstantinov, Meschevsky, Zhukovsky and Tsander—covering the period from 1881 to the early 1930s—Dr. Tokaty traced the development of Soviet rocket engineering, which began immediately after the October Revolution. Dr. Tokaty took pains to explode the myth of "hundreds of German rocket scientists and engineers deported from Peenemunde, Berlin and other rocket centres to Russia". He explained that the U.S.S.R. did not get a single leading V-2 rocket scientist or administrator, not a single complete rocket factory, nor even a single new project. On the other hand, 130 leading German rocket scientists and technologists, including Wernher von Braun and Gen Dornberger, were evacuated to the U.S.A. with their theories and projects. Nevertheless, the Russian rocket

engineers, said Dr. Tokaty, working independently, achieved results which were in certain cases even better than those achieved at Peenemunde.

Today, there are in the U.S.S.R. more than 15 academies, institutes and higher colleges of aeronautics and space technology exclusively, besides a number of departments and chairs of aeronautics and astronautics in Universities. Each has laboratories of its own.

U.S.A. STRIDES

In the U.S.A. also the space programme is now receiving considerable attention. There are two government space agencies, the National Aeronautics and Space Administration (NASA) on the civilian side and the Advanced Research Projects Agency (ARPA) in the Department of Defence. Besides these, the Services have also their own projects.

Most of the major aircraft companies in the U.S. have now switched over to rocketry and other space programmes. The General Dynamics is working on the Atlas, the Boeing Airplane Co. is busy with Dyna-Soar and Minuteman, Douglas is developing Skybolt, and McDonnell Aircraft Corporation, which is the prime contractor for the Discoverer, Midas and Samos satellites, earns the major part of its sales proceeds from missiles and other space products. The giant American Aviation, whose assembly lines have been crossed by more aircraft than those of any other company, is now working on projects running from rocket propulsion to inertial guidance. In all, there are eleven old-line aircraft companies, which are bidding for a prime contract on project Apollo, which is expected to land an American on the moon in 1969.

No new industry has ever cut across so broad a spectrum of U.S. business. Altogether, there are at present 50,000 companies in this business.

INDIAN INDUSTRY

An appraisal of the Indian aviation industry *vis-a-vis* a review of the current trends makes an interesting study. If it is borne in mind that the rapid advancement of aeronautics in some of the countries of the West has been due to the two World Wars and their after-effects, and also to the high state of industrialisation enjoyed by these countries for a long time past, the progress made by India since independence does not seem small. A comparison of the Indian aviation industry with that of the West may appear preposterous now, but it is worth noting that the aviation industry started as early as 1903 in the West and has had highly favourable conditions for growth, whereas in India this industry is of recent origin and lacks the support of general industrialisation. Industrially backward and starting with a depleted economy, the country had to face overwhelming odds during the post-partition days. In the defence policy, India has scrupulously steered clear of military alliances and sought the friendship and goodwill of all. She believes that war, as a means of settling disputes, is an anachronism.

Notwithstanding the many handicaps, the aviation industry grew fast. By 1951 the first Indian aircraft, the HT-2, had started crossing the assembly lines at HAL, Bangalore. The manufacture of Vampires and later of Gnats was also started at HAL. Recently this factory has signed an agreement to manufacture Rolls-Royce Dart engines. Earlier the manufacture of Bristol Siddeley Orpheus engines was also started.

In addition to developing the HT-2, HAL has designed and manufactured Krishak, a four-seater aircraft, and Pushpak, but the most spectacular achievement was the design and production of the first Asian supersonic jet fighter HF-24.

In July 1959, an agreement was signed by the Air Force Base at Kanpur with Hawker Siddeley Aviation of the U.K. to manufacture the AVRO-748. Since then the Kanpur Base has grown up rapidly and when, in November 1961, the AVRO-748 made its successful inaugural flight, it testified to the dogged determination of the Air Force engineers, who started their project in the midst of grave misgivings in various quarters. Earlier a multi-purpose light communication aircraft, christened Kanpur-1, was also designed, developed and constructed at the Kanpur Air Force Base.

There is little doubt that with the general industrialisation of the country, the aviation industry will grow much faster. Perhaps within the next decade and a half, the Indian aviation industry will emerge as one of the world's leading ones. Already, India has become one of the six countries capable of producing supersonic jet aircraft. However, the following points which arise from a review of the aviation industry in some foreign countries merit study:

DEFENCE POLICY

Aviation industry bears a close relationship to defence policy. As such, it is essential that the defence policy be formulated with utmost circumspection and thought, keeping in view the practical aspects of the country's defence. Such short-sighted policies as the British White Paper of 1957 may spell disaster to the economy of the country. Aviation industry is a costly and intricate enterprise. It is, therefore, essential to plan the manufacture of aircraft with great care. Defence, being a dynamic problem, requires constant adjustments and revisions due to a variety of reasons, like political developments, internal or external, scientific advance, etc. Since the aviation industry of a country depends primarily on its defence policy, costly projects, which may have only ephemeral utility, should be avoided.

Pakistan and China, which are not favourably disposed towards us, possess enormous striking power. Pakistan has American 104 Starfighters. The Chinese Air Force is equipped with powerful interceptor-fighters like MIG-15, MIG-17 and MIG-19 and among its bombers has squadrons of Ilushin 28, TU-2 and TU-4. In India's case the redeeming feature is that whereas both Pakistan and China depend almost exclusively on foreign military aid, India is wisely planning to be self-sufficient.

RESEARCH AND DEVELOPMENT

Aeronautical research is of paramount importance for the growth and advancement of the aviation industry. Modern defence equipment and scientific research are closely guarded secrets of the Big Powers. In times of emergency, therefore, India cannot depend on foreign countries for the procurement of her defence requirements. Self-sufficiency in defence equipment and ordnance is the pre-requisite of national security. It is a happy augury that the Ministry of Defence has seriously taken up the problem of self-sufficiency in defence production. Many defence science laboratories have been set up in various parts of the country to conduct original research on the defence problems of India.

It is vital to set up an institution on the lines of the Royal Aircraft Establishment, Farnborough, which, besides conducting its own research pro-

gramme, should be able to coordinate the work of other units. It should work in close association with other civilian and defence institutions conducting similar research. Duplication of effort and rivalry between civilian and service establishments should be avoided at all costs.

The Air Research and Development Command functioning under the U.S. Air Force has been doing valuable work in conducting research projects in lightweight alloys, precision sensing and measuring instruments, fabrication techniques and propulsion plan improvements. Its operations are carried out in each of these areas: basic research, applied research and systems improvement; and its interest breaks down into these seven fields: propulsion, materials, electronics, geophysics, bioscience, aeromechanics and general physics. A beginning has already been made in India by setting up a Directorate of Technical Development and Production (Air). It is only a modest beginning. The functions of the Directorate have to be considerably enlarged to enable it to discharge its role well.

The Space Age has come to stay. If the Indian aviation industry is confined only to the production of manned aircraft it would before long be an obsolete industry. Besides, in order to keep our defence services up-to-date, it is imperative to take up research on guided missiles and rocketry with seriousness, for ultimately the emphasis will switch over to the military projects of space.

BASIC FACTORS

The growth of the Indian aviation industry is governed by the following factors:

- (a) finance;
- (b) technical know-how;
- (c) growth of subsidiary industries;
- (d) skilled labour; and
- (e) procurement of raw materials.

As for finance, India is at present engaged in the overriding task of financing her Five Year Plans, which seek to feed the teeming millions of her population and raise their living standard. Defence, however, is by no means a less significant problem, for what the Five Year Plans would have achieved will have to be more vigorously guarded by the defence services. If the government finds it difficult to undertake the task of developing this industry, it should encourage the private sector to make an attempt. Given assurance of a fair deal, many reputed foreign firms may be willing to co-operate with Indian industrialists.

There is an acute shortage of aeronautical engineers in the country. It requires a radical reorientation of our educational system to tide over this difficulty. Due to lack of facilities and proper guidance, the majority of Indian students still go in for arts subjects. If India is to catch up with the advanced countries, greater emphasis has to be laid on the teaching of science and technology. Basic and advanced institutes of aerodynamics and aeronautics should be established in large numbers to train technicians and engineers on a priority basis. Many talented young men in the villages of India, who at present receive little or no education, can be trained to be useful mechanics. It is necessary to keep abreast of the latest progress and an exchange programme of scientists with the countries of the West will be useful.

Development of the aviation industry depends to a great extent on the general industrialisation of the country. If the aircraft companies were to manufacture everything they need for their aircraft, they would fritter away their energy at the cost of specialisation and quality. Various companies specialising in engines, airframes, electrical equipment and other components will go a long way to accelerate the pace of development of the aviation industry. We find HAL in a peculiar predicament today. It has to manufacture everything from a pin to an engine. There are no subsidiary industries to help it. It has resulted in HAL becoming a highly cumbersome and unwieldy organisation. For better efficiency and speedy production, it is expedient to have complementary establishments specialising in different branches of the industry.

Procurement of raw materials presents a difficult problem. Our mineral resources have not yet been fully explored and exploited. Alloys which can withstand the stress of heat and atmosphere are not yet made in India. We have still to depend on foreign sources for metals like Titanium, Beryllium, Columbium, Molybdenum and some types of stainless steel. The imports need foreign exchange and may not be available in times of war when they are most needed. This is likely to impede the progress of the industry at critical times. It is, therefore, necessary to explore our own mineral resources. Research projects for introducing new metals likely to prove useful to the industry may also be undertaken.

VAST SCOPE

There is enormous scope for the aviation industry in India. Apart from defence requirements, which will naturally claim the lion's share, the industry can be developed to feed the internal civil market and foreign markets in the Afro-Asian countries. Many of these countries are still under-developed and quite a few are still struggling to attain independence. With the growth of trade and commerce and rise in the standard of living, aircraft will occupy a more important place in the future pattern of living. Probably in a decade's time aircraft will be used extensively in many of these countries for agriculture, trade and commerce and tourism, and unless disarmament takes place, the defence requirements of the newly independent countries will also go up.

With the development of research, growth of industrialisation and exploitation of internal mineral resources, the Indian aviation industry will undoubtedly emerge as the foremost industry of the country.

POLITICAL CONTROL IN THE CHINESE COMMUNIST ARMY*

By Dr. S. M. CHIU

THE frustrating experience of the Laotian and Vietnamese Armies in fighting the Communist guerillas has led many people to ask why the Communist guerillas seem able to fight so much more effectively than the better-armed government armies. Many factors influence the effectiveness of a fighting force. There is one obvious distinction which may provide the answer in this case. The Communist officers and men are indoctrinated, disciplined, and controlled by a pervasive political apparatus to which every minute of the officers or men's lives is accountable, and by which the officers and men are conditioned to respond to the wishes of the party in the way it wants them.

To the Communists, war is not a match of arms alone but a competition of human and psychological factors. It is the political control apparatus that is responsible for the harnessing of these factors by instilling in the soldiers the will to fight and the desire to win, by demoralizing the enemy and encouraging him to defect, and by winning the sympathy if not outright support of the civilian population.

Presumably, the political control system in the Communist guerilla armies in Southeast Asia is similar to that in the Chinese Communist Army. Since information on the Communist guerilla is still lacking, an examination of the Chinese Communist system may be instructive.

The political control system in the Chinese Communist Army is as old as the army itself. It was first introduced into the National Revolutionary Army in the 1920's by Russian advisers. Later, it was inherited by the embryonic Red Army of Mao Tse-tung and Chu Teh, composed of survivors of several abortive Communist uprisings in 1927. The system differed from its Soviet counterpart only in that it has, up to the present time, placed more emphasis on control of the men than of the officers.

Theoretically, the control system aims at preserving what Chu Teh called the "five harmonies": between army units, between officers and men, between army and government, between army and party, and between army and civilians. In simple language, the purpose of political control is the complete subordination to the party of the entire army, making it ever responsive to the party's call to action, whether it be railway building, foreign intervention, or hog raising.

Communist China considers the army merely an arm of the party—and hence of the state. To erode the army's separate identity a sustained process emphasizes political education and psychological conditioning rather than outright elimination of the intransigent. The Chinese Communists believe that by this process of continuous "remoulding," officers and men alike can be made instantly responsive to party commands. Army personnel are exposed constantly to a limited number of theses such as "the army is the army of the people." By the use of a combination of intimidation and incentives soldiers of all ranks are expected to become "ideal Communists" who will react to stimuli as the party desires.

* Courtesy: *Military Review*, August, 1961.

STRUCTURAL ORGANIZATION

Structurally, the system of control consists of a hierarchy of party committees paralleling army unit commands (party branch on the company level, and cell in the platoon), and a hierarchy of political departments which are integral parts of the army command at all levels. Between these two hierarchies are the political commissars (*Cheng Wei*) attached to all units down to the company level. On the battalion level the commissar is known as the *Ying Chiao Tao Yuan*; on the company level *Lien Chih Tao Yuan* (*Politruk* in Soviet Army). Each platoon has a political cadre and each squad a political "warrior."

As is to be expected, the party committees are the highest authorities in planning and policy-making within their own jurisdictional spheres, subject only to higher party organizations. It is mandatory for the army to carry out their decisions through the unit commands and the political departments.

Functioning under the veil of semi-secrecy, the party committees maintain a firm grip on party members and non-members in the units under their jurisdiction, both through their power to take disciplinary action against errant members, and through control over promotion, demotion and transfers of all personnel. Party committees initiate or transmit policies handed down from above, discuss them at party conferences, and then refer them to the unit command for execution through the political commissar. The unit command may then pass these policy decisions on to the lower units to be discussed.

Prepared by party "activists" in advance, the lower units are expected to adopt these policies as if by voluntary democratic action. This is what the Communists call "following the mass line." This control by party committees is reinforced by the political commissars who, as party representatives in the units, are solely responsible for the execution of party policies and are vested with the authority to question and to correct all activities of the units to which they are assigned.

This presents a dualistic organizational framework which has tempted many to speculate on the possibility of conflicts between the military and political personnel. In the Chinese Army, however, it appears unlikely that the commissars are, or ever have been, empowered to countermand purely military orders as their Russian counterparts were in the early days of the Soviet Red Army. The commissar and the military commander are in practice equals, responsible to the party committee for political and military affairs respectively. Conflicts between them may, however, arise from matters that are not clearly under the jurisdiction of either. In this eventuality, the issue is referred to the party committee, and to the military committee of the central committee of the party if necessary.

At the present stage, serious conflict is avoided by the fact that all ranking officers of a particular unit are, at the same time, members of the party committee of the same level of which the commissar is secretary. Because the very career of the commander may depend on the goodwill of the commissar in his capacity as party committee secretary, deference to the latter is to be expected.

POLITICAL DEPARTMENTS

The actual implementation of party policies is the function of political departments. The top-level general political department for the entire army, which is responsible to the Politburo but administratively attached to the Ministry of National Defence, has eight divisions: organization, cultural affairs, propaganda, civilian relations, security, youth work, army postal service, and general

affairs. It controls the hierarchy of political departments from the front armies down. At lower levels, however, the political departments may be simplified in organization by merging related functions such as cultural affairs and propaganda under one section.

Of special interest is the security division which is officially in charge of intelligence and counter-espionage, probably only for internal security against possible enemies of the party. It is not known whether this division is staffed by external secret police personnel, but its function probably is limited to that of ferreting out and identifying subversive elements through a network of spies and informers. One observer has asserted that the political "warriors" in the squads were often used by the company commissar as informers to keep tab on other squad members. Coercive measures apparently are entrusted to the regular army command.

COMPANY POLITICAL OFFICER

The key to the entire system is the company political officer because in him are concentrated all the responsibilities of political education and because he is in contact with the men at all times. Here is what Mao Tse-tung (*Selected Works of Mao Tse-tung*) said about the company political officer in 1928:

"The system of party representatives has been proved indispensable, particularly at the company level. . . . [The party representative] is to promote political training of soldiers . . . direct mass movements . . . The facts tell us that whichever company has an able political officer, is the best company."

Assisted by his deputy and a cultural officer, the company political officer keeps the men in his company under constant surveillance and directs all their off-duty activities through the company club (called by various names at different times) and its seven committees: study, production, sanitation, evaluation, amusement, athletics, and bulletin.

With the possible exception of the athletic and sanitation committees, all of these have an obvious bearing on political control. Thus the study committee is in charge of the political and cultural studies of the men. The production committee directs the men to contribute to their own living, thus easing the burden on the people (ostensibly to improve army-civilian relations) and the government. The evaluation committee directs specially appointed members of the squads to evaluate merits and demerits in the performance of duty. This latter is done regularly, even in the heat of battle, to serve as a means of encouragement or as a lesson for recalcitrants.

The actual operation of the control system is even more pervasive than the structural organization described above indicates. According to the Communists, it is not enough to be proficient in combat or superior in physical strength in order to be a good soldier. He must have what Chu Teh called "intelligent understanding," which includes political consciousness, a certain level of literacy, and the espousal of the labour point of view. Plainly, these qualities can be so flexibly interpreted as to encompass a wide range of activities of the men. The method used to create intelligent understanding is conditioning through indoctrination and "habituation" through direct participation.

CULTURAL PROGRAMMES

In peacetime, literacy programmes occupy a good part of the time of the men. Prior to 1949, literacy programmes for the army were sporadic, but even so the American reporter Harrison Forman observed in 1945 that over 80 per cent of an army stationed near Yenai, the wartime Communist base, could read

newspapers. Beginning in 1949, a more intensive programme was initiated—first in Manchuria, then in other parts of the country. Spectacular results were claimed by the Communists. It should be noted, however, that the programme has been conducted by political officers who are actually instructed to combine “cultural” with political studies. At present, literacy programmes aim at making all army men the equivalents of junior high school graduates.

Besides these so-called cultural studies, strictly political education is regular fare for the men in the form of daily political lectures by their commissars, and group discussions on current affairs within the framework of Communist ideology, government policies, the history of the Red Army, and the history of the Communist revolution. Through these discussions the men are reminded constantly of the “tradition” of the army which they are enjoined to uphold by cultivating a voluntary urge to participate in the many campaigns launched or instigated by the party and government. Thus in 1949 the entire army joined the newly founded Sino-Soviet Friendship Association, an organization to strengthen cultural ties between Communist China and the Soviet Union, giving it the intimidating support of the army.

TROOP ENTERTAINMENT

Peacetime control may be exerted also through entertainment for the troops. Hundreds of cultural troupes, musical contingents, motion-picture groups, and a broadcasting network are controlled by a department of the general political department called the cultural work division; of these, the cultural troupes seem to be the most fully developed. Apparently, these troupes travel among army units staging plays with heavy political dosages based on themes well known or related to the personal experience of the unsophisticated soldiers. Between their visits, the bulletin and amusement committees of local company clubs publish news stories, instructional and propaganda songs, or mobilize local talent to entertain the troops.

In time of war, control is augmented by additional indoctrination to prepare the men psychologically to meet the demands for sacrifice and what the Communists call “revolutionary heroism.” This additional process begins with recruitment and mobilization with melodramatic fanfare followed by inculcation of hatred for the enemy, and ends with review meetings during and after campaigns to evaluate the performance of individuals and units.

Prior to 1955 soldiers were recruited on a “voluntary” basis. This was made necessary by the fluidity of areas under Communist control before 1949. To attract desirable elements, or any at all, to the colours, therefore, the Communists have had first to destroy the traditional image of the soldier, which was none too complimentary, and then to raise the soldiering profession to a level of respectability by persistent propaganda. This job lay within the province of the political workers in the army. Even now, when military service is obligatory, similar methods are employed.

HATE THE ENEMY

Once in the army, the men are methodically led to develop “political and class consciousness” by helping them recall the alleged exploitation in the pre-Communist society. This is done by selecting, or more accurately, “fabricating” (the Communists actually use the term *Chih Tsao* which means “to make”) “typical cases” (*Tien Hsing*). These “methods” or “types” who supposedly have suffered the most from the enemy at hand (whoever it may be) act as catalysts. They are carefully coached to tell at mass accusatory meetings emotion-charged stories designed to arouse their listeners to search their own memories for

incidents in their lives to match the drama revealed by the "types." The themes of these stories then are referred to the units for small group discussions, and the common experience presumably is channelled to a common hatred of the enemy.

In battle, the conduct of the men is evaluated constantly. For distinguished service one may be rewarded the title "hero" who is emulated in *Li Kung* (to render meritorious service) campaigns. Many things can make "heroes" of the men, such as economical use of weapons or labour-saving methods in digging trenches. One of the most publicized "heroes" was Wei Lai-kuo who is supposed to have killed almost 400 enemy soldiers with his rifle, and for years after the civil war still told of his exploits at political meetings in the army.

If mistakes are found in "post mortems," a rectification campaign may be in order, spreading to the entire army if serious ideological faults are found to exist (such as looting and war weariness). Moreover, the army is not immune from the periodic party "purification campaigns." These are launched with each change in party line; or, as has happened many times since 1942, when so-called contradictions exist, often as a result of the expansion of party membership and the consequent inclusion of diverse non-proletarian elements.

More recently, a general "study" campaign was again launched to bring the entire country into step with party lines. In the army this campaign revolved around the study of Mao's call for "correct handling of contradictions within the ranks of the people." It has since burgeoned into the so-called "Two-anti" and "Five-Good" campaigns (Two-anti: anti-waste, anti-conservatism; Five-Good: good at study, good at taking care of arms, equipment, and public property, good at production, good at eliminating accidents, and good at physical training) to make the army men both "Red" and "expert".

PSYCHOLOGICAL TACTICS

In addition to these intra-army controls, Communist policies toward Prisoners of War and civilian liaison work also are part of the control system. The former do not, of course, stem from humanitarian considerations, but are designed to destroy enemy morale. By the claim that the Communists have always accorded preferential treatment to Prisoners of War, their propaganda had telling effects in China's civil wars, especially among the Manchurian Army in Shensi province when Chiang Kai-shek was held briefly in captivity in late 1936.

Mao Tse-tung reported in 1928 that soldiers captured by the Communists were given the choice between staying with the Red Army or, with travelling allowances, returning home or to their own lines. Young officers usually were given two or three weeks of indoctrination and then given the same choice. It would not be surprising to find many captives baffled by this seeming leniency, since they had been led to believe that the Communists had no mercy for Prisoners of War. Therefore, even those who chose to return to their own lines inevitably spread stories of their experience, thus sowing the seeds of disunity and defection.

In the 1930s, when the Communists were blockaded by the Manchurian Army of Chang Hsueh-liang and other government troops in Shensi, the Communists used similar psychological warfare tactics. Knowing that the Manchurian soldiers wanted to fight only Japanese troops who had occupied their north-eastern homeland in 1931, the Communists sent groups of political workers

to the hills close to the fighting front to sing patriotic songs that appealed to the Manchurians. Night after night, wailing voices, aided by the autumnal winds of the north-west, penetrated into the positions of the Manchurian armies. It does not seem unlikely that this helped disaffect them from the national government.

CIVILIAN RELATIONS

Civilian relations work (*Chun Min Kuan Hsi*) aims at uniting the army with the people. The twin objectives of civilian relations are to maintain discipline in the army vis-à-vis the civilian population, and to muster popular support for the army. The often-quoted "Three Disciplinary Rules" and the "Eight Points of Attention," evolved by Mao in 1928, are designed to "convince" the people that the Communist Army is different from the traditionally feared (and pitied) armed hordes of the past, and, at the same time, impart to the soldiers a feeling of professional pride.

The Three Disciplinary Rules are: obey orders under all circumstances; do not take a single needle or a piece of thread from the people; and hand in all booty to the government. The Eight Points of Attention follow: talk to the people politely; observe fair dealing in all business transactions; return everything borrowed; pay for anything damaged; have proper respect for women; do not beat or scold the people, damage crops, or ill-treat Prisoners of War. These rules were re-promulgated in January 1947 when the civil conflict was beginning to assume nationwide proportions. Every year in the past decade, army personnel have been reminded of them in the yearly "support-the-government-love-the-people-and-support-the-army" campaigns which constitute the chief manifestation of the "close" relationship between army and civilians. Launched during the Chinese New Year's season, these campaigns combine political with social festivities.

During such a campaign, army officers and men are required to purge themselves of "warlordist" tendencies by self-criticism, while the civilians are persuaded to organize "troop-comforting" missions to local garrisons. At the end of the fraternizing, the army personnel pledge publicly their support of the government and love for the people, while the civilian participants express their support of the army as well as of the government.

The pervasive control system apparently has been effective in controlling the officers by checking the resurgence of the war-lord system, which has undermined political stability so often in modern China, and in compelling absolute obedience from the rank and file. For the officers, tendencies toward self-aggrandizement are discouraged by several factors.

First, the periodic ideological campaigns—regular nationwide or partywide remoulding campaigns as well as yearly armywide campaigns—expose the minutiae of deviationist thought. The fear and suspicion generated in the criticism and self-criticism, and the pressure brought to bear by friend and foe are sufficient to intimidate anyone with anti-party ideas and to elicit "confessions" from the accused of "crimes" they may never have committed, for the alternative is disgrace or even physical liquidation.

Second, the system of party committees and commissars, the latter claiming to be guardians of the welfare of the men, increases the distance between the military officers and the men, thereby limiting the paternalistic relationship that characterized the war-lord armies of the past.

Third, not only is the officer status impaired by the existence of a new elite (the political officers), but the identity of the officers as a distinct class is submerged by the fostering in the army of the idea of democracy. This was re-emphasized recently by sending officers to serve in the ranks, some for as long as a year, to familiarize themselves with the mode of life of the common soldiers so as to improve officer-soldier relations. This tends to lower the prestige of the officers in the eyes of the soldiers, and further strengthens the notion that the commissars (and, therefore, the party) alone are the protectors of their interests.

These controls over the officers make it unlikely that military leaders as such play an important role in politics in Communist China at the present time. The few former military officers like Chen Yi and Lin Piao who are now in decision-making positions cannot be said to be spokesmen for the military. It is doubtful that they still retain the slightest control over their former armies. Therefore, it would be a mistake to expect the eruption of conflict between political and military elements in Communist China even though differences of opinion may sometimes be expressed by military leaders.

This, of course, does not rule out the possibility of conflict between the so-called traditionalist political officers who cling to their guerilla past, and the younger generation of "professional" officers. This type of conflict, however, is not one of ideological significance, involving as it does only questions of military doctrine, and, therefore, should not be expected to develop into a crisis in leadership. In the future, more officers will have been drawn from outside the party, and they may find it more difficult to reconcile professional excellence and political requirements. But by that time, these "professional" officers will have a vested interest in the society of which they are the beneficiaries. They will be too closely wedded to the system to question let alone challenge it.

POLITICAL INDOCTRINATION

Even more important than the control of the officers is the effect of political control over the soldiers. The proverbial docility of the Chinese soldiers tends to make them particularly vulnerable to political indoctrination. Because the soldiers as a class have been held in low esteem in traditional Chinese society, they tend to feel flattered by the exaltation of their profession. Given some preferential treatment, however slight, they might ultimately identify themselves with the interests and ideals of the party and willingly make sacrifices for those interests and ideals. In their present stage of technological inferiority, the Chinese Communists apparently are placing new and added emphasis on this human element which, according to Chu Teh, remains the decisive factor in war. Nor should this human aspect be underestimated. United Nations Army orders were obeyed unquestioningly, to the extent that soldiers often charged enemy positions not behind but under their own artillery fire, regardless of losses in lives, so long as they would surprise the other side.

MILITARY DOCTRINE

The continued effectiveness of the control over the men, however, depends on the availability of articulate and dedicated political commissars, particularly those on the company level, who must be conversant not only with party ideology but also with military doctrines. By itself this is a large enough order. As the army grows more complex with modernization, and as the revolutionary emo-

tionism recedes in the post revolutionary period, indifferent, incompetent, or ignorant commissars eventually may reduce the entire system to a mere facade. Already there have been reports that some of the company political officers do not even know the number of men in their companies. At the present time, it is not known exactly how the political officers are trained, if at all. Whether they can stand the test of time remains to be seen.

It appears that the most basic weakness of the system is that the officers and men, in the process of indoctrination, are conditioned to accept a set of values, some of which may be false, lacking the spontaneous fanaticism of the Taiping or Cromwellian armies. The more intense and prolonged the indoctrination, the wider will become the gulf between myth and reality; and, therefore, when confronted with concrete evidence that what they have been led to believe has no basis in fact, they may be that much more easily disillusioned. In the Korean War, for example, although the troops were supposedly well-indoctrinated, it was difficult for the Koreans to reconcile their own nationalism with Chinese Communist professions of internationalism. It was equally difficult for the Communist Chinese soldiers to behave like anything but conquerors, thus making the relationship between them and the Koreans anything but "brotherly." The fact that more than 14,000 Chinese prisoners refused to be repatriated is eloquent testimony to the corruptibility of the political control system.

Finally, political control adds a new dimension to war. Despite its weaknesses, it can spell the difference between victory and defeat in war. This is not to suggest that an army should be indoctrinated and controlled to the extent that Communist armies are. But given the low level of articulation among the military personnel in developing nations that are threatened by Communist insurgents, some efforts along these lines to counteract effectively Communist propaganda and political warfare would seem advisable.

REORGANISATION OF AN INFANTRY BATTALION

By Major M. L. TULI

THIS article examines the organisation of an infantry battalion based on Modification 'J' in the context of present-day requirements and recommends changes in organisation, weapons and equipment. Some of these recommendations can, with advantage, be incorporated in the organisation of a standard infantry battalion.

One of the operational roles of our Army is to defend our Himalayan border against a potential enemy whose attacks are based on mass infantry tactics of the kind mounted against the United Nations forces in Korea. Even after reorganising on Modification 'J' an infantry battalion is not entirely suited for operations against the type of potential enemy envisaged under Himalayan border region conditions.

The main factors which normally affect the organisation of an infantry battalion, and in fact any army unit, are:

- (a) *Role of the army.*
- (b) *Characteristics of a potential enemy.*
- (c) *Terrain.*
- (d) *Industrial resources.*

The role of army is to defend the country against external aggression and to assist the Civil Government in times of emergency. Our defence requirements would, therefore, require an army that will have to operate anywhere along the northern border. Although the role of the army is defence, victory in war is not possible by defence alone. The modified version of the infantry battalion must, therefore, be so organised that it can fight equally well in offence or defence.

India has a common frontier with China, Pakistan, Nepal and Burma. Besides Pakistan, China would appear to be the only country which may offer an immediate threat to the security of India. It is an established fact that China now has a large modern army and that it is more efficient than ever before. At present, it is limited basically to home defence and can only find small expeditionary forces of limited strength and mobility. It would seem that for the next four to five years China may confine her activities to creeping progress into adjacent countries to the South and East, with accent on political propaganda rather than on military force. But after that length of time the situation may change because of improved means of communication and move forward of war industries from Manchuria.

HIMALAYAN TERRAIN

The Himalayan border consists of very high mountain ranges running parallel to the border. The lower ranges are covered by thick jungles, higher up there are forests and at the highest elevation there is perpetual snow. Rail communications end at the foothills in most cases. Road communications are poor; tarmac motor roads generally end at the foothills; one ton or jeep tracks extend to frontier civil districts or equivalent centres of civil administration. There are very few landing strips or suitable sites for them; even dropping zones are difficult to find at higher elevations. The local population

is very sparse, and nomadic at higher elevations. It is difficult to obtain sufficient porters or animals for transportation locally. These characteristics produce their own problems, such as confinement of mechanical transport to roads and paucity of dispersal or gun area. Movement from one valley to the next and from one hill to another is slow and difficult. Therefore, operations across country are slow and extremely tiring for men and animals. Local resources of all kinds are few or non-existent. Troops operating in these regions must be self-contained in all respects.

Owing to our present limited industrial potential but large reserve of manpower, the army will be, even more so than in highly industrialised nations, dependent on the infantry as its basic arm. In the event of war, we cannot depend upon any outside assistance. We must, therefore, try and build up our war industries quickly and equip the army with indigenously manufactured equipment. The progress registered in this field since independence has been painfully slow.

REQUIREMENTS OF INFANTRY BATTALION

From the above it is clear that a high degree of mobility is essential. This would require the infantry battalion to be physically very tough and capable of functioning with limited mechanical transport, animal transport or porters without any appreciable loss of fighting efficiency. Then comes fire power, which should be sufficient to enable it to close in on and kill the enemy and to capture and hold ground. Supporting elements must be such that the rifleman could get to the objective with the minimum casualties to himself and the maximum to the enemy. The present tendency of adding fire power at the expense of reducing bayonet strength must be avoided. And finally, the organisation must be flexible, enabling the battalion to switch over, quickly, without loss of efficiency, from one type of operation to a different operational requirement. This would be achieved by training in mental alertness of junior leaders and reliable and speedy means of communication. It must be capable of dealing effectively with any enemy surprise weapons or tactics; at the same time, it should be so highly trained as to be able to do the unexpected in dealing with the enemy.

ORGANISATION AND PERSONNEL

The infantry battalion as at present organised comprises battalion headquarters, administrative company, support company and four rifle companies. Battalion headquarters consists of intelligence, sniper, regimental police and protection sections. There is need to recreate the battalion headquarter platoon because the protection section is not considered adequate to provide for guards and escorts and protection to the Commanding Officer's party. We might think of employing the anti-tank platoon in total for carrying out this important task. This would mean doing away with the two anti-tank guns which are at present there for keeping the technique alive.

Administrative Company

At present the administrative company is made up of the quartermaster platoon, the medical platoon and the transport platoon:

- (a) The quartermaster platoon has a strength of 105 all ranks, which includes 48 men combatants enrolled. This makes the platoon unwieldy, creating corresponding administrative difficulties. It is recommended that non-combatants enrolled borne on the strength of quartermaster platoon be proportionately distributed and borne for

all purposes on the strength of companies. Besides, in jungle and mountainous terrain, rifle companies would normally be operating independently.

- (b) The medical officer with his regimental aid post functions with battalion headquarters during operations. Stretcher bearers would, more or less, be allotted to companies permanently. It would, therefore, be advantageous to place the medical platoon directly under battalion headquarters. Because of the difficult terrain and long time taken for evacuation of casualties to advance dressing station, there is immediate need for inclusion of at least two nursing naiks (AMC). These personnel are necessary to assist the unit medical officer, particularly for treatment of casualties in action. A number of casualties have to be given plasma infusion and prophylactic treatment at the regimental aid post. It is pointed out that in the establishment of an infantry battalion in the British Army, one sergent and five corporals (RAMC) are provided.
- (c) In the field of mechanical transport, because of the undeveloped means of communication, the jeep is the only vehicle which can deliver the goods besides the animal or porter transportation agencies. Therefore, the transport platoon should be reorganised into two sections—jeep section and mule/porter section. Three-ton lorries and one-ton trucks should be dropped in favour of more jeeps and trailers.

Support Company

The support company has the mortar platoon, the signal platoon, the pioneer platoon and two detachments of anti-tank guns. No change in the organisation of mortar, signal and pioneer platoons is recommended. However, there is a definite need for a medium machinegun platoon to form an integral part of the infantry battalion. This is an old controversial topic which needs to be reconsidered. Heavy volume, accurate and sustained fire is just the answer to the mass attack tactics. A point in favour of the infantry manning medium machineguns from within the battalion would be that the unit will have more confidence in its own men and cooperation due to constant training together will be greater.

Rifle Company

No change in the present organisation of four companies is advocated. With four companies the battalion is capable of working in two balanced halves, thus being able to take on an objective in depth in the attack, and of ensuring all-round protection and depth in defence, with one depth company normally available to reinforce any threatened flank. Furthermore, a reserve is always available to the Commanding Officer. The organisation of three platoons in a company, however, needs a bit of reconsideration. A company locality may vary in dimensions depending on the ground. But it is reasonable to assume that in the type of country where we are likely to fight, the approximate dimensions of locality would be 400 yards by 400 yards or a little less. The locality should be capable of withholding a mass infantry assault employing infiltrating tactics supported by artillery. As no penetration within the locality can be permitted, the various components of the locality must be so sited that no appreciable gaps are left. Small gaps of 70 to 80 yards are inevitable. Because of the infiltrating tactics, the locality should be capable of repelling an enemy attack with almost equal resistance from any direction,

which would require four platoons. The company Commander may find it difficult to exercise intimate command and control, but with better signal communications this can be easily overcome. The problem of providing manpower in our country is non-existent and so this increase in strength should not be difficult to arrange. With three components, a locality can only be organised for all-round defence, that is, it can repel an enemy from an expected direction and is capable of offering some resistance should the attack be launched from an unexpected direction. Therefore, the addition of one more platoon to the rifle company is a must.

WEAPONS

Personal Weapons

Rifle: The present .303 Enfield is heavy and has a slow rate of fire. A self-loading semi-automatic rifle which should be lighter in weight and which combines accuracy with higher rate of fire power like the Armalite AR-10/AR-15 rifle is one of the major essential requirements. Our adversaries are likely to be armed with a semi-automatic rifle. This has a rate of fire of approximately 30 well-aimed rounds a minute. The enemy's fire power in a section with this rifle would then increase from 70 to 210 rounds per minute. Even assuming casualties and other duties, a rifle section would then possess fire-power equivalent to two light machineguns per section. This would confer immense advantage on the enemy in both attack and defence. If patrols meet in no man's land we shall be considerably handicapped. There will be the psychological feeling of men armed with an inferior weapon. Therefore, in spite of the disadvantage of greater consumption of ammunition, it is imperative that we re-equip the rifleman with a semi-automatic rifle. To enable firing of rifle with accuracy during the night, a night firing sight system like the multilite which has been developed by the United States Army is a must and should be introduced at the earliest. This is a fairly simple device consisting of elements visible at night which are attached to the front and rear sights of the rifle. The sights are luminous posts which can be adjusted for elevation and deflection in the conventional manner.

Light machinegun: The present bren gun is a light, automatic machinegun which meets the requirement of a section. No change is therefore advocated. We might think of reducing the weight by fabricating it out of unconventional material like the Armalite product of Fairchild aircraft.

Sten machine carbine: The new semi-automatic rifle can fire as an automatic weapon at the rate of 60 rounds per minute and therefore can be used with advantage at close quarters in the jungle and darkness in lieu of sten machine carbine. Instead of two stens, the section will possess six to seven rifles capable of automatic fire. Therefore, the adoption of semi-automatic rifle will result in the discarding of one weapon i.e., sten with the section.

Pistol: A pistol is necessary for Commanders and those carrying equipment such as wireless sets, mortars and stretchers for self-protection. 9 MM automatic pistol with greater stopping power is recommended.

Grenades: The hand-grenade with its lethal effect is very essential in all types of warfare. It is, however, felt that the present No. 36 M hand-grenade should be made lighter in weight to enable it to be thrown a minimum distance of 50 yards. Considering the complexity of weapons and to make the rifleman's job simple, rifle grenade and discharger cup could easily be dispensed

with. With the increase in the range of hand-grenade and the presence of two-inch mortar in the platoon, rifle grenade can be adequately replaced.

Close support weapons

Two-inch mortar: This is essentially an opportunity weapon. It is light, handy and capable of being carried by men. As an opportunity weapon it can smoke an enemy position which is offering resistance in assault. In defence it can light up the front to expose the enemy to our fire. It can neutralise an enemy post with high explosive fire and is the only supporting weapon which can easily be carried with a patrol. These requirements cannot be met at present by any other weapon. It would be advantageous to replace the present mortar with something like a 60 MM(US) mortar with a range of 1,000 yards and weighing almost the same as a two-inch mortar.

Three-inch mortar: In the jungles and mountains, it will be normal for the infantry to operate off the roads/tracks. Supporting arms like artillery and heavy mortars, being mechanical transport bound, will be left behind. An infantry battalion operating on man-pack basis can carry three-inch mortar 8 to 12 miles a day with 12 to 15 bombs per mortar. This ammunition can be fired in a minute and six three-inch mortars would only neutralise a platoon position at a time. If the total supporting fire within the battalion operating off road can neutralise only a platoon, it is not worth much. Therefore, there is need to develop a lighter mortar with longer range and more destructive capability, such as 81 MM (US) T227 mortar weighing only 75 lbs. Each component, the barrel, the base plate and the bipod weighs 25 pounds making three even loads for the mortar squad. The new mortar round weighs approximately nine pounds and has a maximum range of about 4,000 yards. Its bursting area is 30 yards in width and 20 yards in depth, and it can be equipped either with a point detonating, super quick or proximity fuse. As an interim measure, the number of three-inch mortars should be reduced from six to four in order to carry more bombs.

Portable flame-thrower: Men and animals have an instinctive fear of fire. This fear is so great as to paralyse them or make them panic. Flame has several effects. It has a searching and neutralising effect in that it can reach into defiles, bunkers, reverse slope positions and flush out the enemy. Further, it has incendiary effect and can be used by day or night. This particular weapon was used with advantage by the Allied armies in World War II. Therefore, such a lethal weapon that can cause death by burning or asphyxiation should be reintroduced to stem the waves of enemy. No amount of indoctrination or training can overcome the psychological shock caused by flame. The American Army has introduced both one-shot and multi-shot portable flame-throwers. The multi-shot flame-thrower is a light weight, compact, comfortable-to-carry weapon that can be fired from any position with ease. The assembly weighs 17 lbs when empty and 50 lbs when loaded (including the flame-gun). The range of the unit is 50 to 70 yards, and the total firing time is six to seven seconds. It is strongly recommended that the portable flame-thrower should replace the 3.5 inch rocket launcher carried in each rifle platoon.

Anti-tank weapons

In the absence of any tank threat, we should think in terms of withdrawing section, platoon and battalion anti-tank weapons as recommended above. However, Strim grenade may be retained in the section as bunker bursting weapon.

EQUIPMENT

Signal stores

The present provision of 31 and 88 wireless sets is adequate. However, we should try to introduce better and lighter wireless sets. It will not be out of place to make mention of AN/PRC 25 and AN/PRC 35 for battalion and company commands nets respectively. AN/PRC 25 is a back-pack set and weighs less than 11 lbs. Its overall dimensions are 10 inches by 10 inches by four inches, and it has a range of five miles over average rolling ground at all frequencies. AN/PRC 35 weighs about 7.5 lbs including batteries. It has an operating range of one mile and can be slung or carried on user's body in such a manner as not to require the use of his hands or arms.

Line communications within rifle company require reassessment, particularly when the distance between platoon localities is to be comparatively more. For reasons of security and economy, communications in a defensive layout should primarily be by line, wireless being used only as a standby. Considering that the requirements of modern defence are minimum movement over the battle-field and deeper trenches, possibly with overhead cover to provide protection against air bursts, napalm bombs and the like, the use of runners and control by voice are precluded. Owing to dearth of telephones in an infantry battalion, it is not possible to provide line communications to listening posts ahead of defensive layout and to platoon localities. Therefore, it is recommended that sound-powered telephones be provided to infantry battalion for communications within a rifle company.

Clothing and equipment

It is an acknowledged fact that the brunt of fighting in mountains will involve fighting away from the road for long periods. Air supply can overcome the maintenance aspect, but the infantry which is road or track bound will be at a distinct disadvantage in face of an adversary known for cross-country mobility. At present the infantry soldier carries excessive load in assault, battle and marching orders, which is out of proportion to his body weight. A comparative table of loads carried by infantry soldiers of different nationalities given below bears this out:

Nationality	Average body weight (lbs)	Permissible load at 1/3 body weight (lbs)	Load carried at present (approximate (lbs))	
			Assault Order	Marching Order
Indian	135	45	54	70
British	150	50	46	57
American	160	53	45	55
Russian	150	50	45	55

CONCLUSION

Keeping the requirements of the Himalayan border in view, the infantry battalion should essentially be a mobile, flexible and hard-hitting unit equipped with the latest equipment and weapons, produced as far as possible indigenously. The reorganisation of the battalion as recommended will lead to some reduction in present-day weapons and to greater efficiency and enable the infantry battalion to more effectively fulfil its role in the defence of India.

ARMAMENT ADVISORY COUNCIL

By Commander M. R. A. RAO, IN

THE reader is invited to refer to my previous article "Soldier, Sailor, Tinker, Tailor versus Ironmongery" which appeared in the last successive issues of this journal.¹ In that article, I referred to a body which exists in the United Kingdom under the name and title of the Ordnance Board. A corresponding organisation has not to date come into being in India, although at various levels the necessity for such an organisation has been felt and expressed.

From the Inter-Services aspect, the term "Ordnance" has many meanings. Also, the term "Ordnance Board" and its functions as understood in India at present are to a large extent at variance with those of the Ordnance Board in the United Kingdom, and it is my considered opinion that the use of the term "Ordnance Board" for any body in India which may correspond to the one in the U.K. is likely to lead to misconception and misunderstanding; as such, I would prefer to use the term "Armament Advisory Council" instead of the term "Ordnance Board".

HISTORICAL BACKGROUND

About 1765, two Committees known as the "Colonels' Committee" and the "Field Officers' Committee" were set up to deal with new ideas flowing from inventors. By the end of the 18th century, both these committees were reconstituted on a more permanent basis. What distinctive part each of these committees played is not evident, but in due course they were combined to form the "Colonels' and Field Officers' Committee". The last-mentioned committee survived for at least 25 years.

In 1805, it was decided to set up a Select Committee at Woolwich. It was a committee composed of Heads of Departments with the Director-General of the Field Train as President ex-officio. It was established to advise the Master-General of the Ordnance on technical matters arising out of naval and military affairs. The first President was Lieut.-General Sir Anthony Farrington who, we are told, was one of the youngest man of high rank then in the Royal Artillery for, as the record puts it, "he was but sixtysix". He held this post till his death in 1823 at the age of eightyfour. His successor, Lieut.-General Robert Doggules, continued in the appointment till he died in 1827 in his eightythird year. The third President, Sir John Macleod, remained in office till he died at the age of eightyone in 1833. There were no more octogenarians, but as the Director-General of the Field Train was chosen from amongst the most senior officers of the Regiment, and as till 1853, the Heads of Department were selected with due regard to seniority, it was inevitable that the Select Committee should be composed of elderly gentlemen who represented unduly the element of caution and experience as opposed to that of wisdom and energy. To put it bluntly, the committee was hide-bound, steeped in traditional methods, lacking in imagination and opposed to change.

SECREC Y AND RESERVE

Another of its failings was its peculiar aptitude for secrecy and reserve,

¹ Please see USI Journals for April-June, 1960, July-Sept. 1960, and Oct.-Dec., 1960.

* Extracted from the forthcoming book by Brig. O.F.G. HOGG.

and its assumption of oracular wisdom. This was, no doubt, due in part to the subjects referred to the committee being classed as "confidential", but it arose mainly from the strong tendency, in those days of age and rank, of the committee to repress any enquiry with which they were out of sympathy and which they considered to be troublesome and possibly dangerous to authority.

The peace which Europe enjoyed after the Congress of Vienna allowed this august, though pompous, body to remain unchallenged till 1852, when it was reconstituted under the name of the "Select Committee of Artillery Officers" with the Director-General of Artillery as its President. Its task was then confined to assisting the Master-General by giving its opinion on scientific or professional subjects connected with the Artillery service.

The advent of the Crimean War brought about such a spate of inventions and suggestions upon Henry, Duke of New Castle, Secretary of State for War, and gave such an impetus to the mechanical ingenuity of the country, that His Grace found the Select Committee of Artillery Officers quite an unsatisfactory and inadequate court of appeal. Its slow procedures, its very limited acquaintance with the industrial resources of the country, its dislike of stating professional opinions on new ideas and its unpopularity amongst those persons referred to it, all decided the Duke to make a change.

ORDNANCE COMMITTEE

The new body, known as the "Ordnance Select Committee", which came into being in February 1855, consisted of six Artillery Officers of long service in order to retain that element of experience considered essential to its success. These officers were not necessarily remarkable for their scientific or professional attainment, but represented what is now termed "the user's point of view".

To this body were added:

- (a) the Professor of Mathematics in the Royal Military Academy;
- (b) the Ordnance Chemist;
- (c) Inspector of Machinery;
- (d) Heads of two Departments not represented earlier;
- (e) two Engineer Officers.

A closer relationship with the mechanical and scientific worlds was brought about by associating with the Committee two eminent civilians, Prof. Wheatstone and Mr. C. H. Gregory, C.E. The Duke also tried to infuse activity, to train younger Artillery Officers and to secure more sympathy between the Committee and the younger Members of the Royal Regiment by directing that two officers of the rank of Lieutenant Colonel or Captain specially selected for their mathematical and scientific achievements, should be added to the Committee without regard to their official employment. Further, the Committee were empowered to take up enquiries on their own instead of being strictly confined to such matters as might be referred to them.

The appointment of the Naval Director-General of Artillery as the Vice-President became to a certain extent necessary because the Select Committee of Artillery Officers, apart from its shortcomings, was an Army Body and, therefore, hardly competent to deal with the many engineering and naval problems placed before it. It was hoped that the other new members, including the Naval Vice-President, would rectify these omissions.

RECONSTITUTION

The Committee was on a part-time basis as all the members except the two civilians were appointed ex-officio. However, the flood of inventions which poured in as a result of the Crimean War soon proved too much for such functioning, and in 1859 the Ordnance Select Committee became reincarnated as a whole-time body, all civilian membership being abolished. In the same year this reconstituted Committee absorbed the work of the Small Arms Committee, which was dissolved in 1859. The newly reconstituted Ordnance Select Committee survived till December 1868 and was replaced in 1869 by the "Council of Ordnance". This Council was again made up of ex-officio members.

This conglomeration of different committees dealing with the various aspects of the same generic subject was not a happy solution to an ever-growing problem, and the gradually increasing pressure of work brought about by scientific and technological advancement soon demonstrated that a Central Co-ordinating Body was essential. In 1881, therefore, a main Standing Committee was established under the nomenclature of the "Ordnance Committee" and this marked the birth of the present board.

EXPLOSIVES COMMITTEE

Based on the recommendation of the Explosives Committee and representation from other responsible officers, not to mention the urgency stressed by the Admiralty in 1900 for obtaining a better propellant than the current cordite, a body known as the "Explosives Committee" was set up in May 1900.

The Explosives Committee functioned for six years and was succeeded by the "Ordnance Research Board" under the presidentship of the President of the Ordnance Committee; the Scientific Members of the Explosives Committee remained to serve on the Ordnance Research Board and to this body a Naval Captain, a Colonel, the Superintendent of Chemical Research, and the Proof and Experimental Officer were added. The Ordnance Research Committee was shortlived because it was found that there was considerable overlapping between it and the Ordnance Committee. Therefore, the two bodies were amalgamated at the end of 1907 under the title of the "Ordnance Board".

In 1915, during the First World War, the Ordnance Board was dissolved and was re-formed under its original title of "Ordnance Committee". As time passed, air problems were presented to the Committee and to deal with them Air Members were added. Finally on January 1, 1939, the Ordnance Committee was charged with the development of small arms, a common problem for the three Services, and by absorbing the Small Arms Committee was again renamed the "Ordnance Board", the title it bears today. In May 1940 an additional Vice-President (Air) was appointed and thereafter the Presidency has, in turn, been held by officers of the three Services. The Board is an Inter-service Technical Trials and Advisory Board, its main function being to ensure that armaments and explosives for the three Services meet the staff requirements and are fit for service.

THE INDIAN SCENE

The Services from time to time introduce new items of equipment on the basis of changing circumstances. The introduction of new items of armaments and connected stores is particularly significant at the present moment, when there is a phased changeover from World War II weapons to more modern

ones. The qualitative requirements are enunciated for such items of armaments and other stores and from then on, as has already been explained in my previous article referred to earlier, a complex procedural cycle comes into operation. The armament advisory council is expected to tender unbiased advice to the user services and other connected organisations on matters referred to it. It must be clearly understood that the council is a purely advisory body and as such the user service or any other organisation is at perfect liberty to accept or reject the Council's advice. The conduct of trials in respect of all new items and connected equipment and the evaluation of the results thereof is the responsibility of the Council. Neither the Services, the designer, the manufacturer, nor the Inspector can afford to devote undistracted attention to such work and even if he could, the possibility of a bias cannot be ruled out in the ultimate findings and recommendations. It is, therefore imperative, that functionally the Council should be responsible to the user services and should be administratively an Inter-service Body. It is moreover necessary to establish an independent Trials Body to be termed the "Armament Advisory Council". Such a body of experts, though manned by personnel from the Services and other organisations connected with Armaments, may be expected to be impartial in evaluating the functional properties of stores in terms of qualitative requirements and to proffer unbiased advice.

ARMAMENTS STORES

In India today the design aspect of Armament stores has not made much progress and we are still largely dependent on foreign sources. The designs of most of the stores manufactured in this country are of foreign origin and in certain cases of urgent necessity, the stores offered by foreign manufacturers are purchased by the Armed Forces at considerable cost. The international market for armaments is such that there are firms dealing in armaments stores which compete with each other in offering their wares at competitive prices. In doing so, the manufacturers make various claims in regard to the performance of their products and it becomes incumbent on the purchaser to satisfy himself that the store offered fully meets his requirements. For this purpose, trials are necessary and the conduct of such trials will also be one of the functions of Armament Advisory Council.

In addition to the above functions, the council will be responsible for trials connected with :

- (a) major modifications to existing equipment which involve a change in design of the original equipment;
- (b) defects/failures of armament stores at acceptance proof and while in storage and in service;
- (c) packages for armament stores;
- (d) master standardisation of propellants.

The Council will also advise :

- (a) the inspection authorities on various proof and testing equipment/apparatus required in connection with the testing of armament stores;
- (b) on matters of inspection and in case of large-scale rejections;
- (c) the Services wherever possible regarding avoidable differences in qualitative requirements with a view to achieving standardisation of stores.

Proceedings of the Council must be kept up-to-date and complete, as many problems which arise from time to time normally have a bearing on problems

which may have been investigated earlier and frequent reference may be necessary.

The Council will also maintain in its permanent records an index on technical intelligence which it may receive from various sources. In short the council after functioning for a few years should be able to provide invaluable information for the guidance of connected departments for generations to come.

Indianisation of Designs

The problem of Indianisation of foreign designs of armament stores to cater for materials available in this country has yet to be undertaken on a large scale. Substitution of material basically involves a change in design and as such may necessitate the staging of trials to assess the functioning of the stores made with indigenous materials. This is one other sphere in which the Council will play a very important role.

SCOPE OF THE COUNCIL

Based on the functions outlined above, the terms of reference, constitution, duties and powers of the Council are given below :

The Armament Advisory Council will be an independent technical trials and advisory body technically responsible to the Chiefs of Staff. It will be under the administrative control of the Ministry of Defence.

The Council will consist of a President, two Vice-Presidents, Members (full and ex-officio), Associate Members (full and ex-officio) and Secretaries. In addition, it may include such Associate Members as may, on account of their special attainments or distinctions in Scientific Research, from time to time, be co-opted by the President.

Duties :

- (a) To advise the Approving Authorities through the Chiefs of Staff on all matters referred to them by such authorities and on any other matters which may come to the Council's notice.
- (b) To stage and order trials in connection with the work referred to the Council and to remark and make recommendations on the results of such trials.
- (c) To co-ordinate, as far as circumstances permit, the technical problems arising out of the requirements of the three Services as put forward by the Approving Authorities and to draw attention to any differences which may be avoidable.
- (d) To advise the appropriate Ordering Authority, on matters of conflicting experimental priorities as and when they arise.
- (e) To report and also to publish in its printed proceedings :
 - (i) the results of tests and trials carried out;
 - (ii) its opinions and recommendations, together with those of responsible technical Directorates and Establishments and individuals associated with any investigation;
 - (iii) statements of policy, approvals and other decisions communicated to the Council by the approving and ordering authorities;
 - (iv) recommendations regarding facilities for the development and trial of armaments.

Powers :

In pursuance of the above duties, the Council will be authorised :

- (a) To obtain the assistance of the Research, Design and other technical establishments as regards design, experimental and research work connected with its own work. On all such occasions the Council will keep the Approving

Authority informed, and any action proposed as a result of such consultations will be referred to the authority responsible. Similarly, all technical establishments concerned with armaments may consult the Council direct.

- (b) To consult any other official bodies, firms or persons associated with scientific or technical development.
- (c) To order and account for material required for trials.
- (d) To initiate with the Approving Authorities any projects or proposals for the employment or development of Armaments.
- (e) To consult direct with the Army, Naval and Air Staffs and to invite the attendance of such of their representatives at its meetings as may be necessary. On all such occasions the Council will keep the Approving Authority informed and any action proposed as a result of such consultations will be referred to the authority responsible.
- (f) To carry out such consultation and collaboration with the UK and other Commonwealth countries as well as other nations as may be deemed necessary.

Organization :

The following organisational set-up of the Council is recommended :

- Division A :* Fuses, pistols, detonators, tracers and igniters and shell igniters, all pyrotechnic compositions connected with the above stores.
- Division B :* Shell/projectiles and bombs for guns, howitzers and mortars, mines, aircraft bombs, grenades.
- Division C :* Ordnance of all calibres and breech mechanism, including mortars and automatic weapons except small arms, driving bands, wear data, measurements of muzzle velocity, metallurgy and materials as applied to ordnance.
- Division D :* Small-arms and ammunition including all automatic weapons of small-arms calibre.
- Division E :* Propellants, charges and cartridges for all weapons including small-arms, cartridge cases except small-arms, primers, tubes and igniters, ballistics internal of guns and howitzers.
- Division F :* Military explosives, pyrotechnics and pyrotechnic compositions, aircraft destructors.
- Division G :* Rockets including ATOs and boosters, rocket ballistics.
- Division H :* Weapon lethality of all kinds, vulnerability of aircraft and missiles, attack on armour and concrete by projectiles and bombs.
- Division I :* Carriages and mountings for all weapons, rocket launchers, fire control equipment including radar and ancillary stores for the above.
- Division J :* Under water weapons and equipment.

Applied Ballistic Department: External ballistics generally, under-water ballistics and range tables.

Department of Guided Missiles: All types of guided weapons.

Weapons Evaluation Group: For the evaluation of performance of weapons as a whole.

Manning and Personnel Aspects :

Two aspects of the manning problem present themselves. The first is that if the Council is to perform all the functions assigned to it in the proper manner, it must be provided with the requisite technical staff, both service and civilian, of appropriate calibre and experience, not to mention status. The second aspect is that in India there is a paucity of sufficiently experienced personnel to whom the various duties and functions can be assigned, and it is possible that such of the personnel as may possess the requisite talent and capacity to handle the work of the council cannot be spared from their present duties.

Co-ordination of effort is a prime requisite for the success of the Council. Such co-ordination and allied responsibilities should be entrusted to a permanent Secretary of the rank of Colonel or equivalent. Here again, in the interests of continuity, the Secretary should hold his appointment for a tenure of three to four years and be succeeded by his assistant who should be of the rank of Lieut.-Colonel or equivalent.

The civilian elements of the staff of the Council should be permanent and should consist of suitably qualified and experienced scientists not below the grade of PSCO and as far as possible such scientists should be placed in charge of subjects such as military explosives, metallurgy, statistics, applied ballistics and so on. The criterion for allocating the subjects to be handled by the civilian scientists should be that extensive user knowledge is not a primary requisite, but on the contrary extensive academic qualifications and knowledge are more important.

The Council will also have to be provided with the normal complement of ministerial class III and IV staff on the basis of divisions and sections attached to each division.

Implications :

The implications of setting up the Armaments Advisory Council are as follow :

- (a) The advice tendered by the Council will normally be accepted unless there are other overriding considerations. Technically the Council is the supreme expert body on matters relating to Armaments and as such, disregarding of its advice must have weighty and valid grounds.
- (b) The organisational aspects of the other departments which will be required to deal with the Council have to be clearly set out. By this, it is meant that there should be a clear demarcation of the research, design, inspection and production functions and also the services should adopt the system of the "ordering authority", "approving authority", and so on, whose responsibilities and sphere of action will be equally definite.
- (c) Most of the work of the Council pertains to experimentation and as such well-equipped proof yards and proof ranges are necessary. Proof is a separate subject to which undivided attention has to be paid. It will be necessary to create an authority known as the Chief Superintendent of Proof and Experiments who will administratively and technically control all proof yards and ranges and carry out proof and trials as required by the various authorities and furnish the results of such proof together with his comments thereon for decision by the appropriate sponsoring authority.

CONCLUSION

From what has been stated in this article, there can be no dispute regarding the necessity for the setting up of the Armament Advisory Council in India. But before doing so, it will perhaps be necessary to put various other houses in order and define their responsibilities and spheres of action and develop clear thinking on the various aspects of each organisation. The monetary aspect of undertaking such a venture will, no doubt, be large, but war is a costly business and if we must be prepared for a war that may be forced on us, we must be prepared to spend the money required. The spending can be in phases and not beyond the resources available in the country. It is a question of priorities and to what extent we wish to function in an organised and methodical manner as opposed to confused, undefined and unsystematic methods.

AN INTEGRATED DEFENCE MEDICAL SERVICE

By Lieut.-General B. M. RAO

IN 1947, just before the transfer of power, a committee was appointed by the Government of India under the chairmanship of Dr. B. C. Roy to examine and submit proposals on the feasibility of integrating the medical services of the Army, Navy and Air Force into one service. The committee's recommendations were accepted by the Government, and the office of the DG AFMS came into being in September, 1948. The first DG AFMS was Lt.-General K. S. Master, MC. Before he retired in 1950, he had implemented many of the recommendations of the Roy Committee and formulated a charter of duties and responsibilities of the DG AFMS which, with minor modifications, remain in force today.

The principal change effected was that the DG AFMS served on the staff of the Ministry of Defence, while each Service headquarters continued to have its own DMS responsible to the Chief of Staff of the Service concerned for the administration of his medical service. The DG AFMS was charged with the responsibility of co-ordination between the three Medical services.

The three DsMS with DG AFMS as Chairman constituted the Medical Services Advisory Committee to formulate all medical policies of the Armed Forces which were, however, subject to the concurrence of the Chiefs of Staff Committee. Implementation of the policies so formulated was left to the Services.

The main responsibilities of the DG AFMS were the recruitment of medical officers for the Armed Forces and their training at the Armed Forces Medical College. In addition, the Medical Stores Depots came under his control and were intended to supply medical equipment and drugs to all Service Medical establishments.

WIDESPREAD INTEREST

This attempt at integration of at least one service of the Army, Navy and Air Force is being watched with interest throughout the world. Parliaments of many countries are pressing for similar integration in their own countries, but at the moment these countries are waiting to see how far our initiative has proved successful.

It may therefore be of interest at this stage to review the progress made in integration and indicate future lines of development. As there were no precedents in any part of the world which could be followed, progress in integration has been a process of trial and error, readjustment and compromise.

In any scheme of integration of services with different chiefs and different traditions, the following factors must be taken into account:

- (a) Loyalty to Service Chief;
- (b) Service traditions;
- (c) Service way of life;
- (d) Service associations and friendships; and
- (e) Professional work.

VITAL FACTOR

A few who are dedicated to the profession may not consider the other factors as of importance, but to the great majority of doctors, they are of fundamental concern. Even within the Army, non-medical officers and men of one regiment develop such a strong sense of loyalty to the regiment that they do not take kindly to transfer to other regiments. This is a frame of mind to be encouraged, because it is one of the factors that sustain morale in the face of odds and during adverse circumstances. If this is true within the Army itself, there is hardly any need to speak of transfers to an entirely different service with entirely different traditions. In my opinion, this has been one of the important factors working against total integration.

Inter-Service transfer in junior ranks was attempted a few years ago, but the officers concerned resented such arbitrary transfers from one service to another to such an extent that the Service chiefs took it up with the Government. As a result, medical officers of the Navy and Air Force were given the option of remaining in their own service or retaining a lien on the Army side for selection appointments. The fact that only a handful of medical officers serving with the Navy exercised their option for retaining their lien for senior army appointments, and none at all from the Air Force Medical Service, shows the strength of this feeling of tradition and kinship which develops after a few years' service. In fact, some Naval medical officers transferred to the Army before the right of option was conceded still feel like fish out of water and would any day prefer to return to the Navy.

PROMOTION CHANCES

The only consideration is that the number of senior appointments in the Navy and Air Force is rather meagre, compared to the number available in the Army. Some senior officers have expressed a fear that if there is no integration, good doctors may prefer to join the Army rather than the Navy or Air Force, because of the lesser chances of promotion to higher ranks in the latter. That this factor hardly influences the minds of the doctors at the time of selection is shown by the large number of volunteers for these two Services and also the fact that most officers serving in the Navy and Air Force prefer to make it their permanent career.

There is also a demand that medical officers of the Navy and Air Force should be allowed to retain their service rank after retirement. Normally all medical officers are given a commission basically in the AMC, and those seconded to the Navy or Air Force get a superimposed commission in that Service. As such, when they retire, the superimposed commission is withdrawn, and they retain their equivalent Army rank. Thus a Surgeon Commander in the Navy or Wing Commander in the Air Force has to assume the rank of Lt.-Colonel on retirement, a rank to which they are strangers and whose responsibilities and privileges they are unfamiliar with.

It is also a fact that a soldier, sailor or airman has greater confidence in a doctor who belongs to his Service and understands its working and traditions. He is more likely to pour out his hidden or suppressed feelings to his Servicemate. This applies with greater force to air force pilots. These factors do not operate to the same extent when he is admitted into hospital. It is, therefore, essential that outpatient treatment should be given by a medical officer belonging to the same Service. Hospitals, however, can cater for all three Services and there is no bar to any Service medical officer working in any hospital. In this way, medical officers of the Navy and Air Force can get

all the professional experience they need by working in Army hospitals without necessarily reverting to the Army for that purpose.

AN EXAMPLE

These are some of the difficulties in drawing up any scheme of integration, under existing circumstances. Of course, if the Army, Navy and Air Force were to be amalgamated into one Service with one Chief, identical ranks and uniform, there would be no such difficulty. It has not been found feasible so far, and some countries which attempted it after the Second World War soon gave it up.

In other matters, however, such as common recruitment, common training, common hospitalisation, common medical supply agency, etc., the integration of the medical services has achieved remarkable success in India and is an example to other countries. It has effected large economies by eliminating the need for separate training institutions, separate hospitals and separate medical stores organisations for the Services, often at the same station.

An integrated Medical Service has this great advantage, that the DG AFMS has few responsibilities for the administration and deployment of the medical services and can devote much greater attention to professional advancement and research. At a time when advances in the profession come with such bewildering rapidity that specialists feel out of date if they are out of touch for more than a few weeks, it is a great advantage to have someone who is not burdened with the cares of day-to-day administration of a large technical service. Even if an emergency arises and general mobilisation is ordered, DG AFMS will be left free to work in his own field and keep abreast of advances in the profession in other countries, which will result in improved standards of medical attention in the Services. Medical officers of the three Services under the aegis of the DG AFMS have worked in close collaboration with the Defence Science Research Organisation and have carried out original work in many fields which have won international recognition.

Proposals have been made in some quarters that the DG AFMS should be the head of the Medical Services of the Army, Navy and Air Force and that the Directors of Medical Services should work as his deputies. So long as there is no Supreme Commander-in-Chief with powers to command all three Services, such a scheme is quite unworkable.

In the past, DGs have occasionally attempted to influence postings of officers in the Services or of selection for training and study leave, leading to conflict with the medical chiefs of the Services. Sometimes, too, they have given conflicting comments on proposals for the reorganisation or deployment of medical establishments of the Services, a matter which is solely and entirely the concern of the DMS of the Service concerned. Such interference has led to friction and has been an impediment to smooth working of integration.

SOME PRINCIPLES

I have set forth above the advantages of integration of the Defence Medical Services and the difficulties experienced during the past decade that the scheme has been in operation. If certain principles are strictly adhered to, I see no reason why integration cannot work satisfactorily in other countries too. These principles are:

- (a) Director of Medical Services, who bears the responsibility for the efficient administration of his Service to the Chief of Staff of his

Service, must be acknowledged as the head of that medical Service. DG AFMS, who is on the staff of the Ministry of Defence and does not belong to any Service HQ, can only act as the link between the three Medical Services and be their spokesman in relation to the Ministry of Defence and the world at large. DsMS must feel free to exercise their initiative in all matters affecting the Service. Their fullest loyalty to their Service chiefs must be supported at all times.

- (b) Medical officers must be allowed to serve in the Service of their choice as a career, and allowed to retain the Service rank after retirement. This, however, will not be a bar to their working in other Service establishments or formations whenever required, but without having to relinquish original superimposed commissions or to change uniform.
- (c) All proposals put forward by the DG AFMS must have the concurrence of the DsMS and, if necessary, of the Service chiefs also. Even in matters falling entirely within the purview of the DG AFMS, such as Medical Stores Depots, Armed Forces Medical College and Artificial Limb Centre, the concurrence of DsMS must be obtained in all matters of policy, as these establishments are of vital concern to the three Medical Services.
- (d) In all matters DG AFMS must deal only with DsMS at Service HQ and not directly with subordinate formations and medical establishments. This ensures that the authority of the DMS as head of the Medical Service is fully recognised and maintained.

THE DOMESTIC SCENE

By OBSERVER

THE first quarter of this year has been of great significance for democracy in India, for the 210 million electorate of the country reaffirmed through the ballot box their abiding faith in democratic functioning and their ability to make an intelligent choice. The whole world watched this event with bated breath, and it was described as the biggest free election ever and the greatest experiment in democracy. For other countries the election was of interest from another point of view as well: two Five-Year Plans had concluded and the third Five-Year Plan had begun, and the verdict of the electorate was being sought not only in regard to the foreign policy of non-alignment, peace and friendly relations with all countries of the world, but also on the domestic policy of planning towards socialism. In fact, sister nations of Asia and Africa have been watching this vast experiment in democratic planning with considerable interest, and the 1962 elections marked a major stage.

That the recent general election was of unprecedented magnitude is not a matter of dispute. The huge body of 210 million voters was required to elect 494 members to the Lok Sabha and 2,930 members to the different State Legislative Assemblies. The bulk of the polling was arranged to take place within a week. In some places polling had to be fixed for later dates due to different reasons: for instance, in the distant Ladakh area of Kashmir, voting can conveniently be held only in summer and that is how it was arranged. Considering the size of the operation, the number of constituencies in which arrangements had to be made, and the area that had to be covered, both electioneering and polling were extraordinarily peaceful. The few stray incidents of violence here and there only served to highlight the peaceful character of the whole election process. The credit for this is as much due to the character and outlook of the people of India as to the efficient organisation of the election machinery.

Before going on to study the results of the elections, it would be worth while to take a brief look at the political parties that contested the elections and their respective policies and programmes as outlined in their manifestos.

Congress: Being the oldest and biggest political organisation in the country, and moreover one that has been in power ever since the advent of independence, the Indian National Congress naturally gets first place in any such review. From the outset the Congress has placed before itself and the country two clearcut objectives:

1. the establishment and successful functioning of a democratic political structure; and
2. the building up of a progressively technological economy and a social order based on justice and equal opportunity for every citizen.

In later years the latter objective was enlarged to envisage a socialistic pattern of society, but this was done without deviating from the basic faith in democratic functioning. It is this ideal of a socialistic pattern of society through democratic means that is enshrined in the Directive Principles of the Constitution of India. The first item on the credit side for the Congress is the fact that under its aegis parliamentary democracy has worked smoothly and successfully in India which in this respect stands in striking contrast to the state of affairs in many other countries of Asia. The second item on the

credit side is the introduction of the concept of a planned economy and a growing public sector.

By and large the Congress election manifesto based itself on its achievements in office and the future programme it has chalked out on that basis. In other words, the achievements of the Congress Governments during the first and second Plan periods and the targets fixed for the third Five-Year Plan, as well as the long-term perspective, are briefly outlined in the manifesto.

Among the major achievements so listed in the manifesto are:

1. While in 1950-51 there were 24 million school and college going boys and girls, at the end of the second Plan (1960-61) the figure had gone up to 46 million; in the third Plan it is expected to rise further to 65 million.
2. The expectation of life in India has risen from about 32 in the forties to 47.5 now, due to better living conditions, especially better and more food and better health, and also to eradication and control of major diseases. This is significant in the context of the huge increase in the country's population, from 361 million to 438 million in the last decade.
3. Growth of the Community Development programme, leading to Panchayati Raj. On September 1, 1961, there were 3,369 blocks covering approximately 400,000 villages and 218 million people. Thus 72 per cent of the villages in India have been covered by this programme which deals with all aspects of rural community life. Panchayati Raj is under implementation in many States. "Panchayati Raj is a deliberate attempt to lessen centralisation and to spread power and authority among the people."

The manifesto emphasized the need for "perspective planning" and said that thinking merely in terms of five-year periods was not enough. "The process of development is not limited to specific periods, but is a continuous one, and the objectives for each period are to be considered in connection with the larger perspective. Unless the long-term perspective is kept in view, short-term objectives may lead to wrong results."

In regard to industrialisation, the basic policy of the Congress was contained in the Industrial Policy Resolution of 1956 (which has been the sheet anchor of the Government's policy in this matter). Its two aims were summarized as:

1. rapid increase in production; and
2. prevention of concentration of economic power either in the hands of the State or the corporate private sector.

This broad arrangement resulted in the emergence of three sectors—public, private and co-operative. While the expansion and growth of the corporate, private sector have been provided for, the other two sectors which are new are expected to play an increasingly dominant role in the national economy. The Congress governments have also paid due attention to the small and cottage industries, it was pointed out.

Congress General Secretary Mr. Sadiq Ali has summarized the concept thus: "The process of development, both in the industrial and agrarian sectors, is designed to liquidate unemployment and end the economic backwardness of large sections of our people, reduce regional disparities and make available the

social services to which we are all entitled, whether we live in towns or the countryside."

It is noteworthy that the Congress manifesto does not slur over administrative inadequacies but emphasizes the need "to gear up the administration, to avoid delays, and to improve its quality to fulfil the tasks allotted to it adequately."

In the sphere of international affairs, the basic policy of working for peace and friendship of all countries and at the same time avoiding alignment with military blocs and alliances was unambiguously reaffirmed. Continuance of the efforts to end colonialism and imperialism was pledged. Complete disarmament and an end to all nuclear tests were urged.

The manifesto reiterated "the resolve of the Indian people to maintain the integrity of India's territory, effective defence of her frontiers, and to repel any aggression that may take place." Referring to the occupation of parts of Indian territory by Pakistan and China, the manifesto said: "It must be the policy of India to bring about vacation of these illegal occupations . . . India seeks peaceful settlement with other countries, but it cannot tolerate aggression from any quarter. Efforts must therefore continue to be made to recover such areas."

In conclusion the manifesto restated the Congress goal of "a united, non-sectarian and secular India."

Communist Party: The first section of the election manifesto of the Communist Party of India was devoted to detailed criticism of 15 years of Congress administration as also of organisations like the Praja Socialist Party, Jan Sangh, Swatantra Party, etc. The Congress was criticized for not having moved quickly enough to give land to the tiller, a job for every job-seeker, and food, clothes and other necessities at cheap prices to the people. The others were attacked for their attempts to "disrupt the democratic movement, divide the patriotic and democratic forces and keep the masses away from struggles."

On the positive side, following were the major policies and proposals outlined in the C.P.I. manifesto:

- (1) Elimination of foreign monopolies and securing of economic independence; as a first step, drastic curbs on the profits of foreign concerns and on their remittances abroad; more taxes on these companies. All new private investment by foreign monopolists must be banned.
- (2) Imports should be cut, exports stepped up. Loans repayable in rupees should be given preference.
- (3) Land ceilings must be re-examined and strictly enforced. Land must be distributed to the landless labourer and the poor peasant. Economic burdens on the peasant must be reduced. Maximum and minimum prices for their produce should be fixed.
- (4) A comprehensive programme of rapid industrialisation in which the public sector must at once be given the leading role and capital goods industries the pride of place. The public sector must be democratically organised and efficiently run. Promotion of small and medium industries should form a vital part of national planning. Backward regions must get a fair deal.
- (5) Banking, general insurance, iron and steel, coal and other mining, oil, sugar, tea plantations under foreign control, and also export and import trade must be nationalized.

- (6) General increase in basic wages, full neutralisation of rise in prices; bonus must be treated as a share of the workers in profits.
- (7) Monopolies must be curbed. "Concentration through interlocking, take-overs, subsidiaries, and similar devices must be firmly checked by the State." Higher taxes, compulsory loans, ceilings on profits and on salaries of top business executives.
- (8) Prices of essential commodities must be pegged down. The disparity in urban and rural incomes must be reduced.

Other points made in the C.P.I. manifesto: Make the rich pay for the Plans; expand the State sector for raising resources; more power for the States, democratisation of local bodies; probe into all corruption charges; provision of adequate housing, etc.

The late Ajoy Ghosh summed up the party's attitude to the Congress foreign policy as "one of general support, together with the demand that it should become firmer and more consistent." On the question of Chinese aggression the manifesto expressed the view that "peaceful negotiations with China . . . will bear fruit and bring the present unhappy chapter to a close."

Bharatiya Jan Sangh: The Sangh manifesto listed four major problems facing the country and promised to solve them; these were:

- (1) national unity and national defence;
- (2) purity and efficiency of administration;
- (3) stability of prices and eradication of unemployment; and
- (4) reorientation of education.

On the question of national unity it said the Sangh wanted "to put an end to the concept of minority or majority on the basis of religion." It stood for a unitary centre with provision for decentralisation down to the lowest level. It thought that if the country's foreign policy had been properly linked with its defence needs, "Tibet would never have been allowed to be occupied by the Chinese." It wanted a National Defence Council to be appointed. It wanted military action to expel the Chinese from Indian territory. The Sangh wanted the policy of non-alignment to be accompanied by non-involvement: "Apart from lending moral and general support to the UN, we need not involve ourselves in affairs that do not directly concern us."

Other major points of the Jan Sangh manifesto were:

The appointment of a high-power commission to go into cases of corruption at higher levels; elimination of concentration of power in the hands of the bureaucracy; inclusion of "right to gainful employment" in the Fundamental Rights guaranteed by the Constitution; the Five-Year Plans to be made labour-intensive rather than capital-intensive, leading to more work and less taxation; more emphasis on public works, small-scale and cottage industries, agriculture and consumer goods industries; priority for basic industries, leading to production of more wage-goods and downward trend in prices and rise in standard of living of the working class.

The manifesto said the Jan Sangh did not believe in doctrinaire classification of sectors but conceived only a national sector.

About education it said: "The Jan Sangh will introduce a system of education that would be in keeping with our national ideals as well as co-related with

our economic plans. . . The Jan Sangh will provide free education up to the secondary stage to all, and to deserving, intelligent students up to the highest stage." It wanted improvement in teachers' service conditions and emoluments.

Mr. Deendayal Upadhyaya said opposition to co-operative farming would be one of the planks of the Sangh election campaign.

Praja Socialist Party: This party gives pride of place to the problem of territorial integrity. "All other issues pale into insignificance when we face threats on our frontiers." Mr. Rohit Dave said in explaining the emphasis in the manifesto. According to the P.S.P., the foremost task was to station sufficient troops on the border and to improve our logistic position so as to make speedy deterrent action possible against any intruder. The pattern of industrial development would have to be re-examined in the light of defence requirements. Greater attention should be paid to the development of the regions on the northern frontier. Alleging a state of unpreparedness in the country, the manifesto says: "The P.S.P. favours the establishment of a Defence Council. It would bring together a number of influential authorities, both civil and military, for consultation and decision. . . Through its select and special staff . . . the Army Council would effectively achieve civilian control, in an informed and meaningful manner, over the armed forces which is of supreme importance."

On the question of national integration, while the P.S.P. did not feel that the nationhood of India was in any sense threatened, it noticed certain developments which needed attention. There was a suspicion in the minds of the minorities that it was difficult for them to get their due share in the political and economic fields. This applies to communal, religious, linguistic, and other groups. "In order to assure the enjoyment of rights, cultural and linguistic, to make equal participation in national life a meaningful reality and to make the safeguards provided to minorities effective, a Minorities Commission with appropriate powers and the status of the Supreme Court will be set up."

On the economic front, the manifesto says that "industrial development as pursued in the decade of planning has generally aggravated concentration of wealth and power." It says: "The P.S.P. would revise the licensing policy, re-orient the credit policies in favour of new entrepreneurs. Every big enterprise would have to farm out considerable work to small producers brought together in industrial estates." A careful watch must be kept on unused plant capacity and plant use must be maximised. Industrial employees should be encouraged to become shareholders. The managing agency system should be abolished. Small industries should be given cheap credit, technical know-how and market intelligence. "The small producers, whether hand or machine, would be assured of market." The co-operative sector should be developed considerably.

In the rural areas, the District Councils should be reconstituted. It would be their responsibility to plan for the development of agriculture and the rural industries sector. "The district plans will offer opportunities of gainful employment to every person."

A high-power commission to go into charges of corruption and the encouragement of national industrial unions are among other points made in the P.S.P. manifesto.

Swatantra Party: The Swatantra Party manifesto starts by charging the ruling Congress Party with having "sacrificed the immediate interests of the common man to near-communist planning." It said the party stood "first and foremost, for the common man", that is, for providing him with food, clothing and shelter, for fuller employment, production of more foodgrains, more small irri-

gation works, more schools, and more small industries. Clean drinking water supply, increased transportation facilities, mobile ambulance facilities are given priority. The party opposed joint farming, land ceilings and state monopoly in the foodgrains trade. Mr. M. R. Masani explained: "As against the collectivist dogma subscribed to by the ruling party and others, the Swatantra stands for the protection of the individual against the increasing trespasses of the State. . . The Swatantra Party is opposed to the methodology of socialism, with its doctrinaire emphasis on Statist policies." The party wants the reversal of the order of priorities in the country's current planning "and holds that in the policies adopted for national development, priority must be assigned to the basic needs of the people—namely, food, water, housing and clothing." It advocates: increase of food production through the "self-employed peasant proprietor"; no disturbance of ownership, management and cultivation of land; every kind of help to agriculture, but no cultivation through organisation; opposition to collectivisation and bureaucratic management of the rural economy; reasonable and steady price for agricultural products.

The party favours incentives to industry for higher production and expansion "inherent in competitive enterprise"; restriction of State enterprise to heavy industries "such as are necessary to supplement private enterprise" and national services like railways and such new industries as are difficult for private initiative. It opposes State trading. Taxation should be such "as will not interfere with reasonable living standards of the people" and should not be "so hard and exacting or so ubiquitous as to prevent capital formation and private investment." It opposes "a programme of development based on crippling taxation, abnormal deficit financing and foreign loans which are beyond the capacity of the country to pay." The cost of public administration should be reduced. The party wanted wages to be correlated to increase in productivity.

In the international sphere, the Swatantra Party believes that "abstract concepts of coexistence and non-alignment have lost meaning" and that "our foreign policy needs to be reviewed and brought into closer relation to the realities of the international situation."

Among other points in the manifesto are: Steps to halt the deterioration caused by linguism; protection of rights and interests of all minorities; introduction of the spiritual element in education; autonomy for academic institutions; no compulsion in the matter of teaching, no nationalisation of textbooks; media of mass communication to be put on an autonomous footing; encouragement to religions.

Apart from the major political parties listed above, there are other political parties which were quite strong in certain restricted areas. For instance, the Akali Dal, whose main demand has been creation of a Punjabi Suba, and the Dravida Munnetra Kazhagam of Madras which wants the formation of an independent Dravida Nadu. The Assam Hill Leaders Conference demanding autonomy for hill areas is another. The other parties which contested the elections are not of much consequence in the national context.

VOTES AND SEATS

The number of voters in India for the 1962 general election numbered 210 million. Over fifty per cent of these exercised their franchise. In fact, polling was heavier this time than on the previous occasions. For the 494 Lok Sabha seats there were 1983 candidates. The break-up was as follows: Congress 488; Communists 137; Praja Socialist Party 166; Jan Sangh 198; Swatantra 172; Socialists 107; Other parties and Independents 715. The number of seats in the

State Assemblies and Territorial Councils totalled 3,297. Of these there were no elections to the Kerala and Orissa Assemblies, as mid-term elections had already been held in these two States. Thus elections were held for only 2,930 seats, polling in respect of a few having been fixed for April and May. The total number of contesting candidates was 12,764, with the following partywise break-up: Congress 2,836; Communists 833; Praja Socialists 1,076; Jan Sangh 1,137; Swatantra 1,033; Socialists 600; Republicans 398; Hindu Mahasabha 185; Ram Rajya Parishad 180; Forward Bloc (Madras and West Bengal only) 40; Jharkhand (Bihar) 75; Peasants and Workers Party (Maharashtra) 79; Dravida Munnetra Kazhagam (Madras) 142; National Conference (Jammu and Kashmir) 40; Akali Dal (mainly Punjab, also Jammu and Kashmir) 48; Democratic National Conference (Jammu and Kashmir) 18; Praja Parishad (Jammu and Kashmir) 25; Harijan Mandal (Jammu and Kashmir) 11; others 36. Uncontested returns totalled 46.

So these were the many contenders for power at the Centre and in the States. The results as announced in the first week of March (and therefore not including the elections in constituencies where they were slated for later dates) were as follows:

Lok Sabha: Total results declared 489. Congress 356; Communists 29; Praja Socialist Party 12; Jan Sangh 14; Swatantra 18; others 60.

The table on the next page gives a comparative idea of the number of Lok Sabha seats won by the different political parties in the 1957 and 1962 elections.

It will be seen from table that the Congress has been returned to power at the Centre with a somewhat reduced majority. The P.S.P. lost strength considerably, while the Communists improved their position a little. The Jan Sangh had its strength more than trebled, and the Swatantra Party, a newcomer, had mustered quite a respectable number.

DISPARITY IN PATTERN

A comparative study of the results of the elections to the Lok Sabha and the 12 State Assemblies underlines a great disparity in the voting pattern and in the individual performances of the principal political parties.

All the major parties polled fewer votes in the elections to the 2,930 Assembly seats than for the 488 in the Lok Sabha. The Congress was no exception to this rule, though the margin between the support it drew for the Lok Sabha and Assemblies was much smaller.

The comparison, as also an analysis of the pattern of voting for the Assembly seats, heavily underlines the decline in the fortunes of the Praja-Socialist Party and of the Jan Sangh.

The Jan Sangh polled only half the number of votes in the Assembly contests that it did for the Lok Sabha—3.6 million against 7.2 million. The party showed an increase in its total support in the Lok Sabha elections. But in the Assembly elections it was seven lakh votes short of its 1957 achievement.

The extent of the Jan Sangh's decline appears more clearly if its performance at the polls is judged against the perspective of the record number of 1,199 candidates it fielded for the 2,930 Assembly seats. More than 50 per cent of them—630 in all—forfeited their security deposits and only 10 per cent of them won. On percentage, however, the Jan Sangh did somewhat better—4.25 in this election against 4.03 in 1957.

Seats won by political parties in the 1957 and 1962 Lok Sabha elections

States	Total No. of seats	Congress		Communist		P.S.P.		Jan Sangh		Swatantra		Other Parties & Independent	
		1957	1962	1957	1962	1957	1962	1957	1962	1957	1962	1957	1962
Andhra Pradesh	43	37	34	2	7	—	—	—	—	—	—	4	1
Assam	12	9	9	—	—	2	—	—	—	—	—	1	1
Bihar	53	41	39	—	1	2	—	—	—	—	—	10	4
Kerala	18	6	6	9	6	1	—	—	—	—	—	2	6
Madhya Pradesh	36	35	24	—	2	—	—	—	—	—	—	1	6
Madras	41	31	31	2	2	—	—	—	—	—	—	8	8
Maharashtra	44	38	41	4	—	5	—	2	—	—	—	17	2
Gujarat	22	16	16	—	—	1	—	—	—	—	—	4	1
Mysore	26	23	25	—	—	1	—	—	—	—	—	2	1
Orissa	20	7	14	1	—	2	—	—	—	—	—	10	5
Punjab	22	21	13	1	—	—	—	—	—	—	—	—	5
Rajasthan	22	19	14	—	—	—	—	—	—	—	—	3	4
Uttar Pradesh	86	70	62	1	2	4	—	2	7	3	—	9	10
West Bengal	36	23	22	6	9	2	—	—	—	—	—	5	5
Union Territories													
Delhi	5	5	5	—	—	—	—	—	—	—	—	—	—
Manipur	2	1	1	—	—	—	—	—	—	—	—	1	—
Tripura	2	1	1	1	2	—	—	—	—	—	—	—	—
Himachal Pradesh	4	4	—	—	—	—	—	—	—	—	—	—	—
TOTAL	494	371	356	27	29	19	12	4	14	18	73	60	60

*Polling in five constituencies (one in Punjab and four in H. P.) at the end of April included only in total.

But percentages in the recent elections for the Assemblies provide a poor indicator of a party's performance. Fewer people have voted for the Assembly candidates in this election (8,47,50,103) than during the last (10,31,23,819). The total poll for the Assemblies after making allowance for Orissa and Kerala has also been much smaller than that for the Lok Sabha.

Consequently, the Congress, which in 1957 had a minority vote of 45.06 per cent showed a more respectable percentage of support in the Assemblies of 50.99.

P.S.P.'s FAILURE

The percentages of almost all other parties appreciated and the Communists accounted for 10.67 per cent of the votes against their last election average of 7.70. The P.S.P. alone suffered a depreciation in percentage down to 6.64 from 10.07.

In the State Assemblies, the P.S.P. suffered a more severe mauling than in the Lok Sabha. More than 57 lakhs of those who supported its Assembly candidates during the last elections cast their votes this time for other parties. Nowhere is the P.S.P.'s debacle brought more boldly into focus than in Andhra. The P.S.P. vote in this State at 34,738 was a mere shadow of what it was during the 1955 mid-term poll (2,03,453) and during the limited elections in the Telengana area in 1957 (4,81,666 votes).

Andhra was no exception; the P.S.P. lost in votes and percentage in every State and the gains registered in the Lok Sabha elections in Assam were not reflected in the returns to the State Assembly. It increased its representation in the Madhya Pradesh Assembly (33 against 12) but its total vote in the State declined from 9,76,000 to 7,24,365. Its representation suffered heavily in Maharashtra and West Bengal.

COMMUNIST POSITION

The Communist Party's returns provide the most glaring paradox of the Assembly elections. Although the party multiplied its voting power in the 300-member Andhra Assembly by more than three times (51 seats against 15) it suffered serious reverses in popular support. It has lost nearly 4,00,000 voters to other parties. On percentage its supporters are down to 19.35 against 31.13 registered during the mid-term poll. Much of its vote has gone to the Congress which registered an increase of more than five lakhs over the total vote it marshalled during the mid-term poll and the 1957 elections in Telengana.

In Punjab the Communists added three seats to the six they held in the last Vidhan Sabha but lost 50 per cent of the vote, which went down to 4,91,984 from 10.3 lakhs.

The anomaly was repeated in a different form in Bihar and Madhya Pradesh in each of which the party added substantially to its support but lost in seats. In the Rajasthan Assembly the party gained both in seats (1-5) as well as on popular support (1,43,547 to 2,76,972). A similar ratio is apparent in Uttar Pradesh—14 seats against nine and 9,16,988 votes against 840,348.

The most striking Communist gains in terms of popular support and representation in the Assemblies were recorded in West Bengal where the party got 50 seats against 46 and 23 lakh votes against 18.6 lakhs.

But in West Bengal the increase in the Communist vote and number of seats has to be studied in the context of the Leftist alliance.

The Congress generally fared better in the State Assemblies than in the Lok Sabha. For instance, in Rajasthan and Madhya Pradesh the fall in Congress support was relatively slight. But its representation in the Assembly was cut by nearly 25 per cent.

The position is reflected more sharply in the percentage which in Rajasthan was down to 40.0 from 45.20 and in Madhya Pradesh to 38.90 from 49.83.

On votes polled it suffered heavily in Punjab (down seven lakhs), Uttar Pradesh (down 33 lakhs), and West Bengal (down four lakhs).

CONGRESS GAINS

But in popular support the Congress registered more significant gains in Gujarat, Maharashtra and surprisingly in Madras despite the fact that the Dravida Munnetra Kazhagam has wrested a quarter of the total seats in the Assembly,

The Swatantra Party made a much better showing in the State Assemblies. But its Assembly candidates got eight lakh votes less than those for the Lok Sabha.

In the overall picture in the State Assemblies, candidates of regional parties have taken more rapid strides during the last decade. The three main regional groups—the Ram Rajya Parishad, the Akali Dal and the Jharkhand Party—between them accounted for more than 50,46,722 votes and 103 seats in five State Legislatures.

The table opposite gives a comparative idea of the position of the different parties in the State Assemblies in 1957 and 1962:

PERCENTAGE OF VOTES

Another interesting aspect of the voting has been the number of votes secured by each of the parties. Of the main parties, the Congress polled only 45 per cent of the valid votes in the Lok Sabha elections, and this was 2.8 per cent less than in 1957. The P.S.P. went down from 10.4 per cent to 6.8, while the Communist Party went up from 8.9 to 10. Swatantra secured 6.5 per cent. The table on page 62 gives the comparative figures of voting partywise and the relevant percentage for the three general elections of the Republic.

PLANNING

Now that the new Parliament has come into existence as also new State Legislatures, attention once again turns to the many problems facing the country, particularly those connected with the transition to Socialism in accordance with the Constitution and those connected with the defence of the country against the design of aggressive neighbours. Before proceeding to study the plans for the next fifteen years, it would be well to have a brief look at what has been attempted and achieved in the first decade of planned development in India. Planning in a democratic context was accepted as the only way to develop a backward economy rapidly and to bring prosperity to the people without agonizing waste of time. Two Five-Year Plans have been executed, and we are now in the second year of the Third Plan.

When independence came, India had a slender industrial base. Millions of

Seats won by political parties in the Vidhan Sabha elections

States	Total No. of seats	Congress		Communists		P. S. P.		Jan Sangh		Swatantra		Other Parties & Independents	
		1957	1962	1957	1962	1957	1962	1957	1962	1962		1957	1962
Andhra Pradesh	300	68	177	—	51	1	—	—	—	19		36	53
Assam	105	71	79	4	—	8	6	—	—	—		25	20
Bihar	318	210	185	7	12	31	29	—	3	50		70	39
Madhya Pradesh	288	232	142	2	1	12	33	10	41	2		32	69
Madras	206	151	139	4	2	2	—	—	—	6		48	59
Maharashtra	264	137	215	13	6	33	9	4	—	—		77	34
Gujarat	154	97	113	—	—	3	7	—	—	26		32	8
Mysore	208	151	138	—	3	18	20	—	—	9		39	38
Punjab	154	120	90	6	9	1	—	9	8	3		18	42
Rajasthan	176	119	88	1	5	1	2	6	15	36		49	30
Uttar Pradesh	430	286	249	9	14	44	38	17	49	15		74	65
West Bengal	252	152	157	46	50	21	5	—	—	—		33	40

Partial elections

Note : 1. There were no elections in Orissa and Kerala for the Vidhan Sabha.

2. The total number of seats in the Assam, Madras and Gujarat Vidhan Sabhas in 1957 were 108, 205 and 132 respectively.

An analysis of Lok Sabha voting

Name of party	1952		1957		1962	
	Valid votes polled	%	Valid votes polled	%	Valid votes polled	%
Congress	47,665,875	45.0	57,579,593	47.8	51,512,225	45.0
P.S.P.	17,373,337	16.4	12,542,666	10.4	7,829,997	6.8
Communist	3,484,401	3.3	10,754,075	8.9	11,399,268	10.0
Jan Sangh	3,246,288	3.1	7,149,824	5.9	7,363,722	6.4
Swatantra	—	—	—	—	7,442,031	6.5
Other parties and independents	34,174,594	32.2	32,487,757	27.0	28,868,605	25.3
Total (all-India)	105,944,495	100.0	120,513,915	100.0	114,415,848	100.0

the rural people suffered under the weight of a traditional agrarian structure. The country's economy had been weakened by long period of stagnation, against the background of increasing pressure of population, followed by the burden of the Second World War. There was widespread poverty and want.

With independence came partition, resulting in millions of people being uprooted and economic life being thoroughly dislocated. The sufferings of the people increased manifold.

BASIC PRINCIPLES

It was in this atmosphere that the Constitution-makers drew up the blueprint for the nation's future. The Directive Principles of State Policy written into the Constitution of India stated among other things: "The State shall strive to promote the welfare of the people by securing and protecting, as effectively as it may, a social order in which justice, social, economic and political, shall inform all the institutions of national life." Also that: "The State shall, in particular, direct its policy towards securing—(a) that the citizens, men and women equally, have the right to an adequate means of livelihood; (b) that the ownership and control of the material resources of the community are so distributed as best to subserve the common good; (c) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment." Thus, ever since independence, two main aims have guided India's planned development—to build up by democratic means a rapidly expanding and technologically progressive economy and a social order based on justice and offering equal opportunity to every citizen. These were the basic aims with which the five-year plans were formulated.

THE FIRST PLAN

The First Five-Year Plan faced this task with limited means and inadequate data. The planners were naturally wary and limited the First Plan's scope carefully. The First Plan thus took over several projects which had been worked out earlier and integrated them into a well-knit scheme of economic and social development embracing every part of the country. By its emphasis on agriculture, irrigation, power and transport, it aimed at creating the base for more rapid economic and industrial advance in the future. The First Plan initiated some of the basic policies which were further developed under the Second Plan. Among the notable features of the First Plan were: reform of an antiquated land system which was inhibiting agricultural production, setting up of a nationwide agricultural extension service as part of a comprehensive community development programme, revitalisation of the co-operative movement, expansion of irrigation and power facilities on a large scale, strengthening and improvement of the administrative structure, establishment of specialized institutions for providing credit to agriculture and industry, for developing small-scale industries and for giving special assistance to backward sections of the population. The First Plan thus offered the people not only the objectives for which to work but also the means with which to realize them through mutual self-help and co-operation and the mobilisation of local resources.

THE SECOND PLAN

The Second Plan carried the basic policies initiated under the First a step further and aimed at a larger increase in investment, production and employment. Its main contribution was to direct the economy towards the next important stage in planned development. It placed special emphasis on basic and heavy industries; with India's vast natural resources, this was an essential element in the strategy for speeding up the development of the national economy over the next 15 or 20 years. This Plan also defined more clearly the key role that the public sector was to play. More than all else, the Second Plan placed before the nation the goal of the socialist pattern society.

As a result of planning there was a substantial increase in the rate of investment. The total investment, public and private, increased from Rs. 500 crores per annum at the beginning of the First Plan to Rs. 850 crores at its end, and reached an annual level of Rs. 1,600 crores at the end of the Second Plan. Corresponding figures for investments by public authorities were about Rs. 200 crores, Rs. 450 crores, and Rs. 800 crores.

The following figures give a rough idea of the progress made under the first two Plans in various aspects of the national economy:

Item	Percentage of increase in 1960-61 over 1950-51		
National income	42
Per capita income	16
Population	21
Agricultural production	41
Foodgrains production	46
Nitrogenous fertilizers consumed	318
Area irrigated	36

Co-operatives:					
Advances to farmers	....	...	...	...	773
Industrial production	...	...	...	...	94
Production of:					
Steel ingots	...	...	...	...	150
Aluminium	...	...	...	...	400
Machine tools (graded)	...	...	...	...	1,518
Sulphuric acid	...	...	...	...	267
Cloth:					
Mill-made	...	...	...	...	38
Khadi, Handloom, Powerloom	...	...	...	...	162
Total	...	...	...	...	62
Minerals:					
Iron ore	...	...	...	...	234
Coal	...	...	...	...	69
Exports	...	...	...	...	3
Power: Installed capacity	...	...	...	...	148
Railways: Freight carried	...	...	...	...	68
Roads: Surfaced	...	...	...	...	48
Commercial vehicles on road	...	...	...	...	81
Shipping	...	...	...	...	131
General education: Students in schools	...	...	...	...	85
Technical education	...	...	...	...	239
Hospital beds	...	...	...	...	65
Consumption levels:					
Food	...	...	...	...	17
Cloth	...	...	...	...	68

Thus it will be seen that in the first decade of planning, which some have described as "the Decade of Hope", the country has made considerable progress in every branch of national life. At the same time it has experienced "the growing pains of an economy struggling to find its way out of deep-rooted poverty and economic stagnation." Despite the many weaknesses and possibly mistakes as well, the First and Second Plans represent the essential groundwork for future prosperity.

THIRD PLAN AIMS

In drawing up the Third Plan the principal aims have been:

1. To secure an increase in national income of over five per cent per annum, the pattern of investment being designed also to sustain this rate of growth during subsequent plan periods;
2. To achieve self-sufficiency in foodgrains, and increase agricultural production to meet the requirements of industry and export;
3. To expand basic industries like steel, chemical industries, fuel and power, and establish machine-building capacity, so that the requirements of further industrialization can be met within ten years or so from the country's own resources;

4. To utilize to the fullest extent possible the manpower resources of the country and to ensure a substantial expansion in employment opportunities; and
5. To establish progressively greater equality of opportunity and to bring about reduction in disparities in income and wealth and a more even distribution of economic power.

The Third Plan envisages a total investment of Rs. 10,400 crores—about 54 per cent more than the Second Plan, and in fact more than the investment in the first two Plans put together. This investment has been found necessary to raise the national income from about Rs. 14,500 crores at the end of the Second Plan to about Rs. 19,000 crores at the end of the Third Plan. It is estimated that in order to raise the national income to Rs. 25,000 crores by 1970-71 and to Rs. 33,000 to Rs. 34,000 crores by 1975-76, net investment in the Fourth and Fifth Plans will have to be Rs. 17,000 crores and Rs. 25,000 crores respectively.

MORE JOBS

Expansion of employment opportunity has been a major objective of planning in India. This was so in the first two Plans and has now assumed a special urgency in the third. With a backlog of unemployment at the end of the Second Plan computed at nine million and an estimated 17 million new entrants to swell the labour force during the Third Plan period, there is need to expand opportunities to the maximum possible extent. It is estimated that in the Third Plan period 14 million new jobs will be created, 3.5 million of these in agriculture and the rest in industry, etc. The current Plan holds out the promise of a better balanced diet for the average Indian. Self-sufficiency in food will assure the country of per capita availability of 17.5 ounces of foodgrains per day. Production of milk will go up by 15 per cent, from 22 to 25.3 million tons. Availability of fish for consumption will go up from 1.4 to 1.8 million tons. Sugar production will increase from three to 3.5 million tons, and vanaspati from 3.3 lakh tons to five lakh tons. Larger production of raw cotton will ensure availability of 17.2 yards of cloth per head per year. Mill cloth production will go up from 5,127 million yards to 5,800 million yards, and khadi, handloom and powerloom cloth from 2,350 million yards to 3,500 million yards.

Free and compulsory education for all children between 6 and 11 years of age is the outstanding feature of the Plan.

The community development movement will cover the entire rural area comprising 5,50,000 villages with a total population of 360 million. There will be more doctors (from 70,000 to 81,000), nurses (from 27,000 to 45,000) and midwives (from 19,900 to 48,500).

INDUSTRIALISATION

A very large share in the outlay of the public sector has been allotted to industry and minerals, in keeping with the policy of industrialisation. In terms of output, investment in industry will raise production of finished steel from 2.2 to 6.8 million tons; of aluminium from 18,500 tons to 80,000 tons; of cement from 8.5 million tons to 13 million tons. Production of sulphuric acid will rise from 3.6 lakh tons to 15 lakhs tons; of caustic soda from one lakh ton to 3.40 lakh tons; of fertilizers from 1.10 lakhs tons to eight lakh tons. The value of machine tools will increase from Rs. 5.5 crores to Rs. 30 crores. The output of diesel engines will go up from 40,000 to 66,000, and of electric

motors from 0.7 million to 2.5 million h.p. Production of transformers will double. Wrist watches will be made on a big scale for the first time. Surgical instruments will be produced on a big scale. Huge foundry, forge plants are to be set up. The Ranchi heavy machinery plant, the Durgapur mining machinery plant will be other major factors in the current Plan. It is estimated that the value of the total output of machines in the public sector will amount to Rs. 200 crores. The target for coal has been set at 97 million tons as against 54.6 million tons in 1960-61. Output of iron ore is to be trebled to 30 million tons. Power output will be doubled, and nuclear power will be generated in India for the first time.

In the sphere of social welfare and health: the number of students going to school will rise from 43.5 million to 63.9 million. The number of hospitals and dispensaries will increase from 12,600 to 14,600. There will be a 30 per cent increase in the number of hospital beds. The number of primary health units will be doubled.

The foregoing are only some of the salient features of a plan that will generate unprecedented economic activity in the country. There are many problems still, but with the cooperation of the people some of these at least can be overcome. Foreign assistance, for instance, is a major factor in our planning. This is inevitable in the first stages of development of an undeveloped or under-developed economy. But in view of the many ticklish problems that such assistance brings in its wake, it is necessary for the country to become self-sufficient by and large to the maximum possible extent. Meanwhile we have to go ahead with such help as is forthcoming.

In any event, we and other under-developed countries can look forward to prosperity only if there is peace in the world. This has been the guiding principle of India's foreign policy ever the country became independent. In the recent months our country's representatives have played a useful role in trying to bring about agreement on the question of complete disarmament and ban on all nuclear testing. Of course, the two problems are still far from solution, the situation having been worsened first by the Soviet resumption of testing and recently by resumption of United States' tests in the atmosphere. Nevertheless India continues to strive to bring about a cessation of these tests as the first step towards agreement.

AGGRESSIVE NEIGHBOURS

While India has been constantly striving for peace and friendly relations with all countries, two of her neighbours have displayed aggressive tendencies. On the one side the Chinese have made incursions into our territory; they have actually occupied certain areas on the Himalayan border. On the other side are the Pakistanis constantly attempting to revive the question of Kashmir's accession without making the least effort to vacate their 15-year-old aggression. They raised the question at the United Nations but the Security Council decided to take it up only after India's elections were over. India has offered to hold bilateral talks aimed at the establishment of good neighbourly relations with Pakistan, but so far there has been no sign of its acceptance. So far as China is concerned, the Government of India have made it clear that unless aggression is vacated there can be no question of negotiations of any kind and have also expressed their determination to get the aggression vacated at the earliest.

THE INTERNATIONAL SCENE

By MAHENDRA KUMAR

THE quarter ending March 31, witnessed a number of international events of far-reaching significance. Some of them directly affected East-West relations, some resulted in change of national governments, and some, led to the settlement of some outstanding international tangles. Thus, on the one hand, a number of attempts were made by the three groups of countries—East, West, and Neutral—to bring about some solution of problems like disarmament and nuclear test ban, Berlin, Germany, Laos and South Vietnam. But unfortunately, almost all the efforts in this direction proved infructuous. On the other hand, there were army revolts in a few countries—successful in some and unsuccessful in others. The countries where they were successful were Burma and Syria and those where they were unsuccessful were Ceylon and Turkey. Internal troubles arose during the period under review in a few other countries also—British Guiana, Iran, Nepal, Rhodesia, etc. However, happy developments during the quarter were a settlement on Algerian cease-fire and the conferences of African States held with the object of ironing out differences between various groups of African States and pave the way for real and effective co-operation.

BURMA

On March 2, U Nu's Government of Burma was overthrown by a military coup led by General Ne Win, Chief of Staff of the Armed Forces, when U Nu and five other Ministers were taken into custody. The same day General Ne Win announced in a broadcast that the Armed Forces had taken over responsibility for the preservation of Burma's safety in view of the "greatly deteriorating situation". He also announced the formation of a 16-member Revolutionary Council with himself as Chairman. Immediately afterwards the Revolutionary Council announced the formation of a new Government for Burma. On March 3 the two Chambers of the Burmese Parliament and the five State Councils were dissolved. On March 9, the Council vested General Ne Win with full legislative, executive and judicial powers with retrospective effect from March 2. It will be recalled that General Ne Win took over as Prime Minister from U Nu in October 1958 on the grounds of a "state of grave disturbance" in Burma. He retained the Prime Ministership until U Nu resumed it following the general elections in February 1960. Within days of the military coup the Revolutionary Government of Burma was recognised by nearly 30 countries.

Following the seizure of power, a number of statements were issued by the Revolutionary Council and by some of its members outlining policy in various matters. It was affirmed that the Revolutionary Government would adhere to "unswerving dedication to peace, friendly relations and co-operation between all nations based on international justice and morality", would give "wholehearted support" to the purposes and principles of the United Nations Charter, and would pursue a policy of "positive neutrality". On economic policy, it was made known that, Burma being an agricultural country, the Revolutionary Council would give top priority to agriculture and encourage small-scale industries suitable to Burma.

It may be conceded that conditions in Burma on the eve of the coup had been more or less unsatisfactory. But this has been the situation for the past twenty years. Therefore, one has to see whether there is any specific evidence to suggest that Burma was moving so swiftly towards disaster during the past

few months as to invite a military coup. There were reports that since September last year Communist, Karen and Kachin insurgents had stepped up their hostile activities. On the contrary, it is also true that there were some hopeful signs that factionalism in U Nu's ruling party, which had caused great concern, would lessen in the immediate future. One of these signs was an accord reached between the two factions about a month before the coup. This is not to suggest that the record of U Nu's Government was entirely satisfactory. Its decision to make Buddhism the State religion and its subsequent attempt to allay the fears of the religious minorities by amending the Constitution to guarantee equal rights to all religious minorities hardly had any justification. It may perhaps be said that U Nu's militant Buddhism led to renewed insurrectionary activities among the Karens and that it was because of this that after the coup the Revolutionary Council declared that, though freedom of religion would be respected, it would not support any particular religion at the cost of others.

ALGERIAN CEASE-FIRE

On March 18, an agreement was signed between the French and the Algerian nationalist negotiators. Consequently on March 19, a cease-fire was proclaimed throughout Algeria ending the seven-year war in Algeria. The agreement covered the process by which Algerians will vote on the question of the future political set-up of Algeria in four to six months and by which France and Algeria after its independence will co-operate. The agreement also provided guarantees for the rights of one million Europeans living in Algeria, an interim political regime and continued presence of French military in Algeria. According to the agreement, the Algerians will vote after the transitional period to let it be known whether they want Algeria to be independent and, if so, whether they wish that France and Algeria should co-operate. On March 20, President Charles de Gaulle told a special session of Parliament that he would seek full powers to execute French commitments if Algeria chose independence in association with France. It was later announced officially that a referendum on the agreement would be held in France on April 8.

The reaction of the Europeans' extremist Secret Army Organization (OAS) to the cease-fire agreement was extremely unfavourable. After the signing of the agreement an OAS document announced that a "national council of French resistance in Algeria" had been set up. The document also contained a declaration of war on the "Gaullist faction" and declared that the OAS objective was to crush the "Algerian rebellion" completely, to "liberate" France, and to "restore" sovereignty to the French people in accordance with the terms of the 1958 Constitution. The first decision taken to fulfil the achievement of this objective was the appointment of the former General Salan as Commander-in-Chief and his being empowered to restore by whatever means sovereignty to France and set up a "Central Provisional Government".

With the signing of the Franco-Algerian agreement ended one of the cruellest wars in colonial history. More than 1,50,000 guerillas of the Algerian National Liberation Front were killed, the French military suffered more than 17,000 casualties and the number of civilian deaths is estimated to be about one million. However, it would not perhaps be absolutely true to say that the struggle for liberation in Algeria has finally ended. Over the agreement hangs the sinister shadow of the OAS which has been showing fury and resorting to increasingly desperate terrorist activities. Mr. Ben Khedda, the

Algerian Prime Minister, is fully aware of this. The danger is that the members of the OAS may take the country to a more vicious conflict rather than live in an Algeria governed by the Algerians. General de Gaulle is, of course, going ahead with his efforts to put down OAS lawlessness. But it is an open question how far his efforts will succeed in preventing resumption of war in Algeria when the OAS is reported to be enjoying the support of a majority of the European settlers.

CONFERENCE OF AFRICAN STATES

In the last week of January was held a conference of 21 African Heads of State and Governments at Lagos (Nigeria) and it concluded on January 30. Earlier, it was hoped that the foreign ministers of the Casablanca Powers—Ghana, Guinea, Mali, Morocco and the UAR—would also participate in the conference, but they did not attend it because the Algerian Provisional Government was not invited. The conference was sponsored by the 19 Monrovia Powers which include most of the former French territories plus seven other States. The aim of the conference was to consolidate the work begun at Monrovia (Liberia) in May 1961 and to lay the foundations of a reconciliation between the Monrovia Powers and the Casablanca Powers. At the conference an African Charter was presented enunciating co-operation between the independent African States and suggesting the framework for a future permanent inter-African Organization. On January 26, the conference adopted a resolution calling for another summit meeting on an unspecified date, which would include the Heads of State and Government of all independent countries of Africa. At the close of the conference, a communique was issued in which African leaders agreed in principle to the creation of an Organization of African States. The communique added that all the participants expressed the hope that Algeria would become independent before the next summit meeting of independent African States begins. The conference also passed a resolution on disarmament calling for the cessation of the manufacture, stockpiling and testing of nuclear weapons.

Supplementing this conference, a conference of delegates from Kenya, Uganda, Tanganyika, Zanzibar, the Rhodesia, Nyasaland, Somalia and Ethiopia was also held at Addis Ababa from February 2 to 9. This conference known as the conference of the Pan-African Freedom Movement of East and Central Africa (PAFMECA), adopted a number of resolutions covering a wide range of subjects from intensifying pressure on South Africa and independence for Bechuanaland, Swaziland and Basutoland to condemnation of President Tshombe of Katanga and a demand for "one man, one vote" in Southern Rhodesia. One of these resolutions expressed determination to "wage a last onslaught on imperialism in Northern Rhodesia under the invincible leadership of Kenneth Kaunda". The British Government were also condemned for "failure to recognize the legitimate rights of the Africans in Southern Rhodesia and for shameless support of reactionary settlers". At the end of the conference, Mr. Kaunda of Northern Rhodesia was unanimously elected PAFMECA President for 1962.

These two conferences can be taken to be important milestones in the effort to hammer African solidarity into existence. But the way these conferences were conducted does not promise a satisfactory result in terms of the achievement of real African unity. If the Lagos conference revealed serious divisions among the independent African States, the Addis Ababa conference showed confusion in the minds of the leaders of the colonies which have

yet to attain independence. In the interest of African unity what is necessary is not only that the States belonging to the "Monrovia Group" and "Casablanca Group" should sink their differences but also that independent African States should help the yet-to-be-independent nations of Africa more actively than they have done in the past.

DISARMAMENT CONFERENCE

On March 14, a 17-nation disarmament conference opened at Geneva. It will be recalled that the ten-nation disarmament meeting set up by the United Nations and consisting of five countries each from the Western bloc and the Soviet bloc—USA, UK, France, Canada, Italy, USSR, Czechoslovakia, Poland, Rumania, and Bulgaria—adjourned in the middle of 1960 without achieving any results. During the period elapsing since then a number of developments took place leading to an agreement between the Soviet Union and the United States and through the United Nations that the disarmament talks should be resumed in an expanded disarmament committee. It was agreed that this committee should have eight neutral nations and additional members. Among the neutral nations included were India, Brazil, Burma, Ethiopia, Mexico, Nigeria, the United Arab Republic and Sweden. Thus the total membership became 18, but France boycotted the conference on account of its differences over the question of procedure, etc. During the very first week of the conference it was evident that no change of heart could be expected in the Great Powers. The Russians submitted proposals already known to be unacceptable to the West. On the other hand, the Americans made new proposals some of which were indeed of some value. But the United States still insisted on effective international inspection and control which is unacceptable to the Soviet Union. The American proposal made a concession on this point, inasmuch as it suggested that inspection might be achieved by random sampling of different areas so violation would not automatically be detected but the chances of detection would be great enough. The Canadian Foreign Minister, Mr. Howard Green, attempted to indicate points of common ground from a comparison of the Soviet and United States disarmament proposals. Mr. Krishna Menon suggested that the nuclear powers should rely upon national systems to detect nuclear tests but similar systems should be established in non-aligned countries. He also said India believed that inspection and disarmament were inseparable. Lord Home of Great Britain made a plea for urgent cuts in arms. Throughout the course of the conference the main stumbling bloc has been disagreement on the question of cessation of nuclear tests.

SYRIA

It will be recalled that in September last there was an army coup in Syria which led to the secession of Syria from the United Arab Republic. In November general elections were held and in December the first parliamentary government was formed in Syria. It was exactly six months after the army coup that, on March 28, the Syrian Army again took over full power. In a series of subsequent communiques it was announced that due to the ill-health of President Kudsi, Dr. Dawalibi's Cabinet had resigned en bloc, that the Constituent Assembly had been dissolved and that a ban had been put on all demonstrations. The "General Command of the Army and Armed Forces" provisionally assumed all legislative, executive and judicial powers until a new Government of 'honest and sincere elements' could be formed.

Prior to March 28, Dr. Dawalibi's Government had encountered increasing political difficulties. The law of February 14 denationalizing industry and banks had been denounced by demonstrating left-wing students and workers as "reactionary" and "imperialist". During the week preceding the coup matters were brought to a head when a demand by the Baath Party for the restoration of political freedom was supported by many deputies and when a bill was submitted by 103 members of the Assembly authorizing the revision of the judgments by court-materials in 1956 against certain political leaders. If the bill had been adopted, it would have meant the rehabilitation of those politicians who had been sentenced at that time on the charge of being "enemies of the country", including the Communist leader M. Khaled Baqdash.

After the March 28 coup, a statement was issued outlining the reasons for the Army's intervention and the political objectives of the Armed Forces. The statement said that, in accordance with its promise, the Army had returned power after the September coup. But in view of the fact that the Provisional Government committed "grave errors", misused the power "for purely personal ends", and violated the laws and the Constitution, it became imperative for the Army to take the power back from the civilians. The statement also said that after the restoration of normalcy the Army would again return power to the civilians. The objectives of the coup were outlined as follows: to restore public liberties, to reinstitute the rights acquired by peasants and workers on the basis of "rigorous Arab socialism", and to encourage private initiative to the extent beneficial to the country. In Pan-Arab affairs, the object was stated to be a complete and general union with all Arab countries, notably with "dear Egypt and our Iraqi brothers". In foreign affairs, the army movement would maintain Syria's obligations and alliances, follow a policy of "positive neutralism", and adhere to the principles of the United Nations Charter.

IRAN

During the third and fourth weeks of January, the Iranian Government experienced new troubles starting with students' demonstrations in Teheran. The demonstrations were ostensibly started against the expulsion of some students from secondary schools. But, in fact, they were for a demand for "speedy elections" and the resignation of Prime Minister Dr. Ali Amini. The demonstration raised pro-Mossadeq slogans. Later the demonstration developed into violent riots. The executive of the National Front—which includes members of the former Government of Dr. Mossadeq—called for a day of strikes and demonstrations against the Government. As a result of the riots a number of political leaders were arrested. Dr. Amini told journalists that the disturbances were created by the joint mischief of the National Front, the Tudeh (Communist) Party and landowners.

The importance of these disturbances has to be understood in the background of the Land Reform Law formulated by Dr. Amini's Government after eight months of deliberations by experts and signed by the Shah of Iran on the eve of the disturbances. The law aims at creating the largest possible number of smallholders farming their own land, thereby increasing agricultural output. Though Dr. Amini's Government was able to quell the violent demonstration in Teheran, yet the fact that such incidents are such frequent recurrences in Iran cannot be ignored as unimportant. This fact is an evidence that even after eight months of Dr. Amini's rule, the opposition forces have not by any means been less articulate than before. One reason may be that Iran has not yet had sweeping reforms in the administration as were expected

when Dr. Amini took charge of Government in May last. Even if Dr. Amini's charge that the Soviet Union had a hand in engineering the students riots be true, it must be admitted that middle-class unrest has been steadily growing during recent years. The main grievance of the "enemies" of Dr. Amini's Government is that it has not been able to push through the plans for economic and political reforms and that Dr. Amini is holding office only on account of the Shah's pleasure. On the other hand, Dr. Amini's difficulty is that he cannot act against corruption in high places because that may lead to a rightist *coup d'etat*. The National Front, which is being supported by the followers of Dr. Mossadeq and the frustrated middle class, is quite active. The Shah has not been able to hold genuinely free elections because of his fear that they might result in the extremists coming to power.

But seen from another point of view, it would appear that the situation in Iran is full of paradox. It is said that the students who have been rioting have been inspired not only by Communist agitators but also by angry landowners. They have been demonstrating against the land reform programme of Dr. Amini's Government. The programme of land reform itself cannot be condemned as such. This, in fact, is a welcome radical departure from an old system of virtual serfdom. If the students are really interested in justice and progress, the land reform law should be supported. Anyway, it is strange that the students are being inspired by both Communists and landowners.

CEYLON

"A carefully-planned *coup d'etat*" by certain senior officers of the police and armed forces was smashed by the Ceylon Government towards the end of January. The coup was to have been staged on January 28 with the arrest of some Ministers and political leaders. But the Government foiled the attempt by prompt action. On January 29, eight high-ranking officials were arrested for complicity in a plot to overthrow the Government of Mrs. Sirimavo Bandaranaike. Earlier in the month also there had been some uneasy situation in Ceylon on account of a general strike by left-wing trade unions to protest against the use of military personnel instead of dockworkers who had already been on strike since the middle of December last. Of the arrested persons, three were from the police force, three from the army and two were retired men. This was the first ever plot by the armed forces in Ceylon. Political observers regard it as the most sensational political conspiracy after the assassination of Prime Minister Bandaranaike in 1959.

The official announcement said it was likely that some foreign power was behind the attempted coup. Meanwhile arrests of more and more army and police officers continued. On February 3, 12,000 dockworkers ended their 52-day-old strike in the port of Colombo. The same day the Government announced that the publication of news concerning the abortive coup would be within the scope of prevailing censorship. On February 13 Felix Bandaranaike, Finance Minister, told the House of Representatives that he had been told by one of the leaders of the coup bid that Sir John Kotelawala and Mr. Dudley Senanayake (former Prime Ministers) were in the know of the coup plot. The same day it was also allegedly known that Governor-General Oliver Goonetilleke was also involved. Sir Oliver Goonetilleke thereupon offered himself for interrogation and investigation. On February 15, the Ceylon Government circulated among members of the House of Representatives a draft bill to make special provisions for the apprehension, detention and trial of people suspected of having committed offences against the State. The inquiry into the abortive coup is still on.

BOOK REVIEWS

The Outline of History by H. G. Wells [Revised edition brought up to 1960]. (Cassels, London, 1961) 1270 pages. Price 36 sh.

Wells's famous History needs no introduction or review as, from the very day of its first publication in 1920, it was acclaimed as the best concise history of mankind ever attempted by a truly great writer. It was also criticised strongly by some as a work which could not be called history, by others for its allegedly wrong views and sometimes too strong adjectives such as, for example, those used for the Prophet Mohammed, Communism, etc., etc. In addition, many minor inaccuracies and omissions were also pointed out by readers from different parts of the world. In the light of such criticism the book was revised several times by Wells himself, and after his death by Raymond Postgate and Wells's son, G. P. Wells, who is a Professor of Zoology at the London University. Thus, during the course of its life of more than forty years, the book has been revised, improved and pruned and reprinted so many times that it may be said to have attained near-perfection and maturity at last. Though some new chapters have been added and the last chapter "After the Second World War" has been brought up to 1960, the work still remains essentially that of H. G. Wells, and therefore worth reading if only for that reason. Many readers who have read an earlier edition will perhaps be interested only in the last two chapters, though it is amply rewarding to read the whole book over again to brush up one's knowledge of this vast subject.

There are numerous maps and illustrations, a chronological table of leading events from the year 800 BC to 1960 (though the book says only to 1945) and an index. The present reviewer considers it easily the best and probably the only book on the subject useful for the "everyday purposes of the ordinary citizen travelling about in life", though there are many other admirable outlines meant for the specialists and students of history as such.

P.N.K.

The Canal Duke by Hugh Malet (David & Charles, London, 1961) 200 pages. Price 21 sh.

The author of this book has maintained a longstanding interest in people, boats, poetry and waterways. In an earlier writing, he described a journey across England and Ireland, from Ipswich to Limerick, in his own boat. This journey became the subject of a series of television broadcasts over the B.B.C. The present book tells, with vivid human interest, the story of a man who devoted his life and his wealth to the construction of waterways. The personality around whom interest centres is Francis Egerton, third Duke of Bridgewater, pioneer of river navigation. It is fitting that the author should have quoted Thomas Kempis: "Thou hast come hither to serve, not to govern". These words vibrate with meaning as one studies the biography of Francis Egerton.

Francis Egerton, third Duke of Bridgewater, seventh son of Scroop, Fourth Earl of Bridgewater, was born in 1736. In 1749, he was sent to Eton, as a cure for his neglected upbringing. Eton made a man of Francis, and his guardians decided to send him on a tour of Europe. He

visited France, Italy and Switzerland, seeing many impressive docks and canals as he journeyed across the continent. He was still only nineteen when he returned home, and had to wait for another two years before he could administer the family estates at Ashridge. "In London he gambled at White's, and in the country he began his turf career seriously with a house and stable at Newmarket, choosing blue silk and silver as his colours". Then came crisis in his life. In 1751, two young ladies—the Gunning sisters, Elizabeth and Maria—were ushered into the world of fashion. Daughters of an impecunious Irish squire, these young ladies, not content with conquering Ireland, found their way to London. Francis fell deeply in love with Elizabeth, was engaged to her and was eventually jilted by her. Elizabeth married the Duke of Argyll, and became the mother of four Dukes. Disappointment in love goaded Francis to do some serious work for the first time in his life.

Step by step, the interests of Egerton shifted from gambling and racing, to his Estates. At that time, coal for Manchester had to be carried on pack horses from Worsley to Barton Bridge, and by the time a consignment of coal reached Manchester, it cost double the price at pithead. There could be no doubt that a fair fortune awaited any one who could think of a way of reducing these monstrous charges on transport of coal. In 1757, Francis met John Gilbert at Worsley. The two became close friends from the very instant they met. Both of them put their heads together to plan the construction of a canal which would run from Worsley to Manchester—the first of its kind in England. This was, without doubt, a gigantic gamble. Undaunted, Francis launched on the scheme, enlisted public support; and thus his life work began. In 1759 Gilbert introduced James Brindley, inventor and master craftsman, to Francis. Brindley had designed and patented a steam engine which Francis realized could be put to use in the construction of canals. Thus came to be established "the canal triumvirate". The outstanding achievement of this triumvirate was the construction of the first aqueduct in England.

The most difficult part of their task was convincing people that the construction of an aqueduct was a feasible proposition. "I have often heard" said one of the critics, tauntingly, "of castles in the air, but never before saw where any of them were to be erected". Brindley was, of course, a man who could talk "the hind leg off a donkey". When he found that his technical language could not be understood by the investigating committee in Parliament, he produced a block of cheese and carved out the working model of a large aqueduct, as an ocular demonstration. This was reinforced by the production of a model in clay and sand, which held water. This was done by Brindley with the pattern of a professional conjurer.

As the aqueduct came up, with its sturdy piers rising from the bed of the river Irwell, the Duke was sinking deeper and deeper in debt. "Well Brindley", queried the Duke, "How are we to get the money to finish the canal?" "Well Duke" replied Brindley, "I only know that if the money can be got, I can finish the canal, and it'll pay well." "Ay", said the Duke, "But *where* are we to get the money?" How the money came is a mystery, for that part of the story relates to Gilbert's encounter with "a plausible stranger", with whom he exchanged horses, and his visit to a lonely inn, where he discovered that the saddle bags on his magnificent horse were full. On the 17th July, 1861, the first boatload of coals, carrying 50 tons, was towed across the arches of the aqueduct, on its way to Manchester.

What has been told here is but a brief and sketchy summary of the first half of the book, but this should be sufficient to kindle the interest of any reader in the book itself. The Duke of Bridgewater died in 1803, leaving behind him a wealth of memories, carrying with him, perhaps, only his memories of Elizabeth Gunning. What is memorable, however, is the second verse of the inscription in Latin at the Duke's canalside works. Its English rendering runs as follows:

Stranger! this spot where once did never cease
Great Vulcan's roar, would sleep in silent peace
But that beneath my very stones doth mount
That waters' source, his Honour's spring and fount.

W.T.V.A.

Man Alive in Outer Space by Henry B. Lent (Macmillan, New York, 1961)
147 pages. Price \$3.00.

"This is a new ocean", declared President Kennedy, speaking of outer space, "and I believe that the U.S. must sail on it". In fact space travel has become such a fascinating subject of human interest that scientific research effort is concentrated on it both in Russia and in the U.S.A. Every achievement on one side is being rapidly outmoded by the other. It is not surprising, therefore, that a great deal of what appears in this book should have become out of date, and even what is mentioned in this review should be outdated by the time this review is committed to print. Nevertheless, there are certain basic facts which anyone interested in aero space medicine ought to know, and these are presented by the author in a clear and intelligible form.

The opening chapters contain a historical review of the efforts of American space pioneers and astronauts. It is now well known that a gigantic effort is necessary in order to put one man into orbit. Here is what John Glenn said regarding his co-workers: "There's much acclaim for this flight, but it is only one step in a long programme. I'd like all of you who worked on it to feel that I am your representative. I'm getting the attention for all the thousands of you who worked on it".

Basic facts regarding conditions likely to be encountered in outer space have been stated concisely in three chapters. It is becoming increasingly evident, however, that the "horrors" envisaged in earlier statements regarding outer space are not quite so formidable as they were thought to be. For instance, the stresses of G-forces are capable of being countered during the stages of 'lift off' and 're-entry'. At one time, it was thought that the state of weightlessness would pose many insurmountable difficulties for the astronaut. Glenn has stated with confidence that zero gravity is "something you could get addicted to". In fact, he was able to let go and recover his hand camera whilst in a state of weightlessness. "It just seemed perfectly natural," Glenn reported. "Rather than put the camera away, I just put it out in mid air and let go of it". He could not, however, change the film.

The book contains an interesting chapter entitled "What's for Dinner?" Here again, Glenn's experience is revealing. He gobbled some malt tablets and carefully squeezed a tube of apple sauce into his mouth. He found that swallowing was no problem. He experienced no nausea or discomfort whilst in a state of weightlessness.

The bogey of outer space is isolation. Much has been made of the "break-away phenomenon", but considering the short duration of the enormous distances traversed by space vehicles, even this may not be quite so intriguing a problem. During certain stages in the orbit Glenn reported that he saw a fantastic sight—little particles, about the intensity of a firefly on a real dark night. The Project Mercury Psychiatrist, George Rapp, apparently thought that this might have been a hallucination. "What did they say, John?" enquired the Psychiatrist. Under conditions of isolation, the possibility of experiencing hallucinations cannot be ruled out.

It may be that the psychological problems resulting from isolation will be solved when two-man and three-man orbital flights become possible. In any case the testimony of Astronaut Donald K Slayton who is now scheduled to take off on a three orbit flight will throw further light on the problems of breakaway.

Now that it has been found that the astronaut can 'fly' the capsule either by hand or by using a semi-automatic 'fly by wire' system, human engineers will be interested in determining the simplification of the elaborate instrumentation system in space capsules. What does, however, pose an inveterate hazard to the astronaut, is the accumulation of radioactive materials at certain distances beyond the earth. Glenn's flight extended to a distance of approximately one-sixtieth of the diameter of the earth. At distances beyond this there are radiation belts. It has been estimated, for instance, that the Van Allen radiation belt, above the equatorial region of the earth, is at an altitude of 600 miles, the upper edge being about 3,000 miles. The orbital trip of John Glenn was, of course, well below the region of the Van Allen belt. Nevertheless, it has been claimed that even this does not pose a serious hazard to astronauts. Be that as it may, the accumulation of radioactive materials resulting from an increasing number of nuclear test explosions is something which cannot be regarded with equanimity, at any rate, as far as the hazards of space travel are concerned.

W.T.V.A.

The Yellow Scarf by Lt.-General S. Francis Toker (J. M. Dent, London, 1961)
211 pages. Price 25 sh.

"This book is a biography of Maj.-Gen. Sir William Henry Sleeman, who uncovered Thuggee, fought it for a lifetime, and in wiping it out rendered unique service to his fellowmen. Running parallel with this thrilling tale the disorder and chaos of the Native states is revealed. We see that but for the British Administration, sewed by 'Titans' like Sleeman, India would have remained for many years a subcontinent of feudal, warring despots and races, lost to nationhood. This biography is a reminder that India awaited the British to set them on the path to independence. . . ."

This extract from the dust cover of the book under review is a good summary of the contents of the book written by a fellow Cornishman and one who has had a long and distinguished career in India himself, but the very emphasis of the book grates on modern Indian susceptibilities. Naturally, the book is not written for an Indian audience, but one cannot help wondering whether it is meant to cash in on the current disenchantment prevalent in Britain today—the feeling which, after the liberation of some 600 million people of the world in a friendly and enlightened manner, now seems to cast the British mind back, wondering at the wisdom of the decision. On

the other hand, we in India, too, after discounting these current trends, might with profit look back dispassionately and take stock of the situation as it prevailed just one hundred years ago when William Sleeman served in India.

The portion of the biography dealing with the comparatively short spell that Sleeman spent with units of John Company's army are of interest to any student of military history. Of particular note should be the facts that a military system which permits only seniority to count for advancement cannot be particularly efficient, especially in war. Further, the belief that officers should be the almost sole providers of "gaiety and high life" of "peace stations" is highly false and erroneous, because not only does it distract the attention and endeavour of the officers themselves from their prime task, but it cannot fail to have an adverse effect upon the troops they command. It is also worth noting that the exceptional officer, particularly interested in and qualified for some specific branch of the administration, used to be permitted secondment to the civil departments of the service, where his abilities might be lost to the army, but where his worth was greater to the administration as a whole.

On the subject of the abolition of Thuggee, which takes up the major part of the book, it is of interest to note the painstaking research and study undertaken to understand the phenomenon about which so little was permitted to be known. The good administrator had the humility to learn from where he could—even jail birds were not too low for him to use as authentic sources of information. Having learnt the fundamentals, the setting up of an intelligence system was the next requisite, and this too was got down to in great detail. Confidence begets confidence, and when the "rayot" could get protection from the administration, they came forward with information. The administration was tangibly personal in the shape of Sleeman and his assistants, and necessarily had to be, whether it was in the "frontier regions of the Nurbudda", in what is today Madhya Pradesh or later as the Resident at the Court of Wajid Ali Khan, the King of Oudh. Personality, leadership and above all character was what was demanded and success followed almost automatically when these were coupled with a modicum of ability. The pages of the book under review do not gloss over the crooked or inadequate Englishmen in India at that time either. They failed because they lacked these characteristics or were mediocrities being carried along as passengers by the system. The final point we may note about the system is the support it gave to the man on the spot, support which not only enabled him to carry on in the face of troubles, but which sustained him by commendation and reward when he did well, and which not only made him feel that his efforts were worth while, but also enabled him to take his time in doing his work without being unduly hustled.

The problems of administration, of frontier regions, of areas where lawlessness or maladministration temporarily prevails are now our problems. In spite of the slant of the book previously mentioned we might read it with profit as it might give us food for thought as to why we sometimes fail, or more correctly, we do not achieve spectacular success as quickly as we might hope for, or be expected to gain.

A.M.S.

Mr. Europe: Political Biography of Paul Henri Spaak by J. H. Huizinga (Weidenfeld and Nicolson, London, 1961) 248 pages. Price 25 sh.

This book is a political biography of Paul Henri Spaak who came to be

nicknamed 'Mr. Europe'. Considered one of the foremost architects of the new Europe, the life of Spaak is a battle for power, first in his party, then in his country—Belgium, finally in the world at large. He was Prime Minister of Belgium at 38—youngest in the whole of Europe at the time.

The book reveals the full story of Spaak's role vis-a-vis King Leopold's abdication and the part played by Spaak in the development of the Council of Europe. He was elected the first President of the ministerial committee set up by 16 European states to direct the reconstruction of war-shattered Europe. Europe had become with him what he himself called 'a veritable mania' which left him no rest. It has been said that what he undertook and fulfilled in Europe is without parallel. Though not a saint among politicians he had something of value to contribute—his defiant honesty.

The book has been written with skill and insight and reveals Spaak's contribution to Europe, the world and his own country.

N.L.K.

Statistics of Deadly Quarrels by Lewis F. Richardson (Stevens & Sons Ltd. London, 1960) 373 pages. Price 63 sh.

Arms and Insecurity by Lewis F. Richardson. (Stevens & Sons Ltd. London, 1960) 307 pages. Price 63 sh.

The remarkable growth during the last half a century of the science of statistics and its application in many varied fields of human interest is without a parallel in the history of science. It is literally true to say that statistics has been used for dealing with subjects ranging from kings to cabbages. Karl Pearson employed it to discover the mathematical formula that describes the length of reign of kings, and many an agriculturist found it handy to deal with the probability distribution of the weight of cabbages.

In the popular mind statistics is associated with economic analysis and planning, population and demography, foreign trade and things of that kind. Very few lay citizens are aware of its origin from games of chance, its early association with measurements on stars. Fewer still have come across the part played by this science in the design of experiments, the theory of genetics, or in industrial quality control.

A very unorthodox field was opened up by Professor Yule when he showed that sentence length in the writings of Bernard Shaw, Macaulay and other writers is governed by laws very similar to those of the distribution of velocity of molecules in gases. A new branch of linguistics thus came into being which threatens to take away the romance out of literature and poetry.

Lewis F. Richardson's two books on wars and warlike activity blaze the trail in yet another field for invasion by statisticians. Like Yule, Richardson was inspired by Karl Pearson who is rightly regarded as the father of modern statistics.

These books provide fascinating reading matter for mathematical statisticians, but whether the non-mathematical students of international relations and conflicts will enjoy the whole of it is doubtful. It is to be hoped that such

people will be persuaded to do some serious study of mathematics and statistics as a preliminary to going through these books.

It has been rightly stated that any field of study or department of human knowledge becomes 'scientific' to the extent that its content can be expressed in mathematical terms. Thus physics and chemistry which in the mediaeval days were subjects for literary discussion evolved into mathematical and therefore 'exact' sciences with the work of Newton and his contemporaries and successors. Economics and psychology have in the present century almost undergone this process resulting in econometry and psychometry. Sociometry is only beginning to take shape and now Richardson has fathered what may be called 'bellicometry' in his quantitative treatment of deadly quarrels, and added a new dimension to sociometry in the book on Arms and Insecurity which may perhaps be termed 'politicometry'.

Lewis F. Richardson was born in 1881 in a Quaker family from whom he acquired a bias "that the moral evil in war outweighs the moral good though the latter is conspicuous". This prejudice was one of the principal motives for writing the books under review. The other principal motive was his prejudice that the scientific method is more trustworthy than rhetoric.

After a distinguished career at Cambridge where he took the Natural Science Tripos in 1903, Richardson held many positions in the domain of teaching and research in physics and meteorology during the fifty years until he died in 1953. He was a Fellow of the Royal Society and has published his work in many of the world's scientific journals including at least one in the Indian Journal of Statistics. He states that in 1906 "I sold my physics books in order to raise money to go and see Professor Karl Pearson and learn about statistical proof". He put his knowledge of statistics to good use in developing the material for these two books which were edited and published after Richardson's death by his friends and associates.

In the "Statistics of Deadly Quarrels" Richardson has presented a list of over 300 wars from 1820 to 1949 with precise statements of the causes, the conditions, and the approximate number of war dead in each obtained from exhaustive historical research. This unique body of data has been subjected to very ingenious statistical treatment from which a number of conclusions emerge. Some of these conclusions are reproduced below.

1. "Wars seem to have been distributed in time by chance in respect to both beginning and end. There is no evidence that they have been becoming either more or less frequent, though there seems to have been a tendency, at least since 1820, for large wars to become more and small wars less frequent, and there is evidence of oscillations in the frequency of wars in periods of 9 to 144 years.
2. The losses of life from fatal quarrels, varying in magnitude from murders to world wars, were about 1.6 per cent of all deaths during this period. The largest losses (46.8 millions) were from wars in which the fatalities were over three thousand each, the next largest (9.7 millions) from murders in which the fatalities were one to three each, and the least (2.9 millions) from pacifications, interventions, reprisals, banditries, and gangsterism in which the fatalities were from three to three thousand each.

3. The increase in world population from 1820 to 1949 seems not to have been accompanied by a proportionate increase in the frequency of, and losses of life from, war, as would have been the expectation if belligerency had been constant. Thus "there is a suggestion, but not conclusive proof, that mankind has become less warlike since A.D. 1820".
4. States have varied from one another in the frequency of their participation in wars during this period, but each has varied so much during its history that none can be properly characterized as inherently belligerent or inherently pacific. The problem of war does not arise from the diabolism of one or a few states.
5. States have tended to become involved in wars in proportion to the number of states with which they have common frontiers. Contiguity has been an important factor in war during this period.
6. Common citizenship has not assured peace, nationalism has both induced and prevented wars, but there appears to have been pacifying influences such as common government, intermarriage, common fears, and common culture tending to prevent civil and local wars. The actual occurrence of war has been far less than would be expected from the opportunities for war presented by geographical contiguity. Such occurrences have been even less, proportionately, as the opportunities for war have increased through the advance of sea and air power.
7. The longer groups have been united by common government, the less has been the probability of war between them.
8. Allies in one war may become enemies in the next, but alliances seem to have had some influence in preventing war between former allies. That influence, however, declines with the passage of time since the war alliance.
9. Desire for revenge seems to have been an important cause of war during the period, declining as the inciting war recedes in history but rising slightly after a generation.
10. Economic causes seem to have figured directly in less than 29 per cent of the wars since 1820 and have been more important in small than in large wars. Among such causes taxation of colonials and minorities; economic assistance to an enemy; restrictions on movements of capital, trade and migration; and dissatisfaction of soldiers have had an influence, the importance of which has been approximately in this order. The influence of all these factors together has been less than that of quarrels over territory which may be more political than economic. Relative wealth and poverty of people seem to have had very little influence during this period, contrary to the Marxian assumption that wars arise from class conflict.
11. Similarity and difference of language seem to have had little influence on the occurrence of wars during this period, contrary to the belief of some advocates of universal languages, except that the Chinese language has been correlated with peacefulness and Spanish with warlikeness.

12. Similarity of religion seems not to have made for peace, except in the case of Confucianism, but differences of religion have apparently especially the differences of Christianity and Islam. The statistics suggest, but do not prove, that "Christianity incited war between its adherents".
13. The larger the number be belligerents in a war, the more neutrals have tended to be drawn in. Wars with many participants have tended to be longer and less frequent.
14. A trend for war to become indivisible, that is, for every war to become universal, has not been proved. Most wars have been localized. Neutrals have tended to become belligerents only if two or more world powers have been fighting each other.
15. In proportion to their possible contacts for war-making, sea powers seem to have been less belligerent than land powers.
16. International relations cannot be considered a chaotic field with all nations equally likely to be infected by war. Geographical relations have exerted great influence.

These propositions, as Richardson points out in his Preface, are contributions to the science of international relations rather than to the art of statesmanship. They can, however, help the statesman and the intelligent citizen as well as the investigator. They are all intriguing, many of them are challenging. Some investigators will doubtless remain unconvinced by some of them after studying Richardson's methods of proof. No competent student, however, can ignore them or fail to be impressed by the originality of Richardson's methods, by the objectivity and extensiveness of his data, by the scrupulous honesty with which his methods have been applied to eliminate bias and prejudice, and by the spirit in which he has coupled reason with devotion to the cause of humanity."

In "Arms and Insecurity" the central proposition is that wars are the result of arms races. The treatment in this book is even more mathematical than in "Deadly Quarrels" and as the author himself states this book is not designed to be read by everyone. "It is so customary for political writings to flow on with journalistic ease that many people seem to regard ease as a characteristic of thought about politics, whereas really it is only a characteristic of popularisation. Mankind is surely more complicated than lifeless matter. It is therefore not reasonable to expect that we should understand mankind by using techniques simpler than those required for physics. The very rapid advance of physical science has not depended on pleasant reading in newspapers, but has been greatly aided by difficult reading in the journals of learned societies."

There is no doubt that Richardson's work is a great contribution to sober thinking in international relations. It is, however, difficult to say whether the conditions under which his deductions and inferences were made have changed materially with the advent of nuclear weapons and space travel.

N.T.M.

The Skills of Interviewing by Elizabeth Sidney and Brown Margaret (Tavistock Publications, London, 1961) 396 pages. Price 35 sh.

The conduct of an interview, whether it be for the purpose of personnel

selection or for the investigation of personnel problems, is an important event calling for the exercise of a sense of justice and responsibility. Everybody knows that the interviewer is in some ways at an advantage as compared with the person interviewed. A certain amount of basic information regarding the interviewee is usually available. In a sense, the interviewee is at the mercy of the interviewer. Hence it becomes all the more necessary to emphasise the importance of an objective approach to the interview situation. The interviewee must have a fair deal. He ought to be given every opportunity to express himself freely, and without restraint. What transpires at the interview needs to be evaluated without fear or favour.

It is sometimes thought that the good interviewer is born, not made. There might be some truth in this. Everyone entrusted with the responsibility of interviewing does not necessarily make a successful interviewer. Nevertheless, there is a lot that can be learnt out of the experience of interviewing people. The authors would prefer to regard the art of interviewing as a skill which is capable of being cultivated by training.

This book has been laid out in two parts. The first deals with Selection Interviewing, and the second with Personnel Interviewing. In selection interviewing, the basic requirement is to assess the candidate's potentiality in relation to the requirements of the job. Hence it is of the utmost importance that the interviewer should be clear as to what is demanded by the job. He should also develop the capacity of seeing in a short space of time the personal qualities possessed by the candidates. This would depend to no small extent on the interviewer's approach to the candidate. Here lies scope for the exercise of interviewing skill. The most important danger to guard against is the danger of bias.

Personnel interviewing is basically an administrative responsibility. The need for it arises in connection with some problem which has to be clarified in the light of what different people say. In this case, the interviewer will have to assume the role of a listener, rather than an interrogator. Further, the interviewer will have to develop skill in discerning different levels of meaning. The book contains a chapter on the merit rating interviews. This chapter gives useful hints on how to assess personnel on the basis of their interview performance. The concluding chapter of the book is meant more for the benefit of interviewees than interviewers. The book is illustrated with examples of various types of interview. These should be studied with care by those who are likely to serve on interview panels. All things considered, this book is a useful addition to available literature on the art of interview.

W.T.V.A.

The Moulding of Modern Man by T. H. Pear (G. Allen & Unwin, London, 1961) 220 pages. Price 21 sh.

The views expressed in this book are those of a psychologist who has made a study of the forces tending to mould human behaviour. The book is in two parts. Part I deals with the nature of the individual person acting in a social environment. Part II treats of the individual as he reacts to society. The forces which are moulding our knowledge and actions have been well described and discussed. The author sets the present and future importance of the individual in a contemporary frame. Since the working life of a Service officer is spent with men of many types in more than one situation, and as no two human beings are alike, a study of this readable book will help one in judging personality better.

N.L.K.

The Origins of the Second World War by A. J. P. Taylor (Hamish Hamilton, London, 1961) 296 pages. Price 25 sh.

The Second World War is now a thing of "yesterday"—almost all the great actors of that gigantic drama have left the stage. "Hitler, Mussolini, Stalin and Roosevelt are dead; Churchill has withdrawn from leadership; only de Gaulle is having a second innings." The time has thus come when the historian can view the scene with detachment and give an objective account, that is as far as it is possible for human beings to be objective in such matters. Mr. Taylor, who had already established his claim to be considered as one of the noted historical writers of Britain by his books on "The Course of German History", "The Habsburg Monarchy", and the "Struggle for Mastery in Europe, 1848-1918", has done a truly admirable job in the writing of the book under review. Though there are many other works on the subject already published, the present one is written with a candour and utter lack of awe for the great personalities of the pre-1939 era, which is so entertaining and refreshing. A couple of examples illustrating this and the vigorous, unbiased interpretation of the facts by the author will suffice. For instance, he writes (page 17), "In retrospect, though many were guilty, none was innocent. The purpose of political activity is to provide peace and prosperity; and in this every statesman failed, for whatever reason. This is a story without heroes; and perhaps even without villains." Again (page 33), "There was British disarmament from economy; there was disarmament from negligence and mistaken judgment, there was no disarmament from principle." Every page is bristling with similar and better pithy sayings which make the book delightful reading. There are only two maps, but a very useful bibliography and index.

P.N.K.

The Spanish Civil War by Hugh Thomas (Eyre and Spottiswoode, London, 1961) 720 pages. Price 42 sh.

This is a monumental volume having 720 pages, a large number of illustrations, maps, appendices, an exhaustive bibliography and an index. The Spanish Civil War (1936-38), though a domestic conflict between the Republican Government and the Fascists (the so-called Nationalists), soon assumed such vast dimensions on ideological grounds that practically the whole of Europe and even the United States were involved on one side or the other to some extent. This is clear from the fact that men from the following countries—either regular soldiers or volunteers—took part in it: Germany, Italy, Soviet Russia, France, Britain, Poland, Yugoslavia, the United States, Canada, Hungary, Czechoslovakia, Bulgaria, Albania, etc. In addition, help in arms and money was provided to the two antagonists by these countries and a few others. The gigantic nature of the struggle can be gauged from another factor also, namely, the number of deaths alone, which is variously estimated between half a million and one million.

What were the reasons which attracted so many people from so many countries to come and fight in a strange land? The issues—according to one's viewpoint—were Liberal Democracy vs Reaction, Communism vs Fascism, or Christianity vs Atheism. To the layman, not concerned with fine political distinctions, the fight was between the Republican Government and the insurrectionists. While the democracies—France and Britain—gave only indirect and half-hearted help to the Government, Italy and Germany gave openly and freely to the insurrectionists led by General Franco, who called themselves the Nationalists. The result was—as expected under the circumstances—a victory for the Nationalists. Many young idealists—such as the English poet John Corn-

ford—who could not stay at home and see the Republic being destroyed, left their respective peaceful avocations and countries to go and fight and be killed in Spain. However, nothing was done by the democracies to stop the flow of German and Italian help to the Nationalists. Though the French Government did connive at the transport of volunteers and war material to the Spanish Government, it dared not intervene. Britain followed appeasement and the U.S.A. refused to lift the embargo on arms for the Republicans. The Government and statesmen in Britain were so completely duped by the propaganda of Franco and his supporters that they began to believe that victory for the Government of Spain would mean a victory for communism. The result was the emergence of a Spain heavily indebted to the Axis. Apart perhaps from Munich a little later, this was the most astounding case of appeasement on record. The democracies realised this when the Second World War broke out and although Spain did not declare war against France and England, it supplied Nazi Germany with submarine bases, monitoring stations, war material and even air bases. All the Republicans were, therefore, disappointed when at the end of the world war, Britain and America did not turn their arms against General Franco (p. 620).

The book, an exhaustive and complete study of the Civil War, is full of details and interesting pen portraits of the important leaders of both the sides. The author has evidently consulted all available material on the subject both in Spain and outside and account is, therefore, well documented and authoritative.

P.N.K.

Crimean War Reader by Kellow Chesney (Frederick Muller, London, 1960)
254 pages. Price 25 sh.

The campaign in Crimea has been the focus of interest of a number of students of military history, particularly because of the administrative lessons learnt from this war. The "Crimean War Reader" is a help in understanding how ill administered the formations were. Although the book is not a complete military record of the Crimean War, it contains vivid eye-witness accounts of actions. The author has stated in the preface that his object has been simply to try and give a notion of what the war seemed like at the time.

All sorts of novelties were making their tactical debuts in the campaign. Among the modern technical devices destined to play a part in the war were the electric telegraph ("telegram" is a word first used in this period) and photography. For the first time we have something approaching an adequate photographic record of a major war.

Besides the interest in military devices there was also concern with the conditions in which the British Army served in Crimea. Apart from the breakdown in the transport system, the chief failure was in the medical services. Florence Nightingale is the one individual who in this unhappy war showed more than any other what real energy guided by good sense can do.

The three pitched battles—Alma, Balaclava and Inkermann—have been enlivened by personal accounts. The splendour of the Battle of Balaclava—famous for its two great cavalry charges—the attack by the heavy brigade and the Charge of the Light Brigade is summed up in the following Order of the Day.

"HEADQUARTERS BEFORE SEBASTOPOL."

October 29, 1854.

The Commander of the Forces considers it his duty to notice the brilliant conduct of the Division of Cavalry under the command of Lieut.-General the Earl of Lucan in the action of the 25th inst. He congratulates Brigadier-General the Hon. J. V. Scarlett, and the officers and men of the Heavy Brigade, upon their successful charge and repulse of the Russian Cavalry in far greater force than themselves, and while he condoles with Major-General the Earl of Cardigan, and the officers and men of the Light Brigade, on the heavy loss it sustained, he feels it would be due to them to place on record the gallantry they displayed and the readiness and perseverance with which they executed one of the most arduous attacks that was ever witnessed under the heaviest fire and in face of powerful bodies of Artillery, Cavalry and Infantry."

The book has been written with skill and is well worth a study. The need for giving good administrative support to an Army is as important today as it was then.

N.L.K.

The Campaign in Italy 1943-45 [being the 10th volume in the series "Official History of the Indian Armed Forces in the Second World War, 1939-45"] (Combined Interservices Historical Section, India & Pakistan, 1960 Distributors: Orient Longmans) 699 pages. Price Rs. 32.

This is a monumental work covering 700 pages of Royal Octavo size, dealing in detail with the fighting in Italy during 1943-45, and is another feather in the cap of the C.I.S. Historical Section and its Honorary Director. The author, Dr. Dharm Pal, seems to have left no stone unturned in the course of his painstaking and patient efforts to make the book an exhaustive and exact account of the tactical situation as it developed from day to day in this theatre of the Second World War. Particular attention has been paid to the heroic deeds of the Indian troops, though the contribution of other Allied troops has also been sketched to complete the picture. This is as it should be.

The present reviewer, however, feels that a little more detailed description here and there of the overall strategy (as distinct from tactics) would have made the book still more useful. Happily this deficiency has to a large extent been made good by the General Editor Dr. Bisheshwar Prasad's brief but brilliant Introduction, and the book can, therefore, be read with profit both by the soldier and the general reader interested in military history.

It is not possible here to attempt an outline of the course of fighting in Italy, but it would be sufficient to make a reference to two points: Firstly, that before the campaign was decided upon, there was considerable debate in the Allied councils whether it was good strategy to launch an offensive here. Ultimately the view of Churchill—who was keen on knocking Italy out of the war—prevailed at the Casablanca and Trident Conferences. It is however certain that to Stalin these operations appeared merely as a "minor relief from German pressure" till a full offensive could be launched from the Western coast of France. Roosevelt too was not very keen about it, but he agreed to it as "an interlude which would satisfy his British ally and provide engagement for British forces". Secondly, the Italian campaign is remarkable for being probably the slowest and the most plodding campaign fought by the Allies during the Second World War as it was fought through the difficult terrain and swamps and mountains of Italy "against a skilful and well-entrenched enemy having all the advantages of defence". The results and advantages secured by the successful termination of the campaign were certainly not commensurate

with the effort and sacrifice involved, and this probably goes to prove that those who were opposed to it were after all right and Churchill for once was wrong. This is however a point on which much can be said on both sides. In any case the campaign provided the Indian and Allied troops excellent opportunities for showing the stuff they were made of in fighting under difficult conditions and there is no doubt that they made full use of these opportunities.

The get-up and the printing of the volume have maintained the high standard of production which one has come to associate with publication of the Historical Section. The book has numerous maps excellently drawn, attractive illustrations, many appendices and an index. A very useful accession to the evergrowing literature of the Second World War indeed.

P.N.K.

The British Destroyer by Captain T. D. Manning (Putnam, London, 1961)
pages 148. Price 42 sh.

The title is apt to be misleading. It is not really a history of the British Destroyer; it is not a story as such of the development of a destroyer in the Royal Navy nor is it the exploits of any particular destroyer, HMS "Kenny" for instance, which had distinguished itself either in war or in peace.

The book is really a collection of interesting photographs of destroyers of the Royal Navy from the days commencing from the end of the last century to the present day; tabulated account of almost every single destroyer, its name, year of launching, name of builders and subsequent disposal; in fact a sort of "Jane's Fighting Ships" devoted exclusively to destroyers. Glancing through these photographs one can get a fairly good idea of the various stages that a modern destroyer has gone through—from the tortoise shell foc's'le and ramming stems of the old days to the modern raking stem and flush foc's'les; from the four funnels and mastless ships of the old days to the single funnel and heavily equipped lattice masts of today; from the more or less uncovered open air bridges to the present-day enclosed bridges; and generally it can be said that the destroyer has undergone a change for the better where living conditions are concerned and particularly where protection against nuclear radiation is essential.

There are very brief chapters interspersed among the photographs giving accounts of how names of destroyers were chosen; the anti-submarine weapons that were fitted on them; formation of destroyer flotillas; development of destroyers; and a final one on the fifty American destroyers that were loaned to Britain during the last war.

With the present-day destroyers entering the domain of light cruisers equipped with guided missiles—although they continue to be termed 'destroyers' or indeed 'Super Destroyers'—the author has restricted himself to the type of ships that are traditionally accepted as destroyers and has not peeped into the future.

The book is interesting enough in itself but how far it will interest the lay reader is debatable.

Those who have served in destroyers or were in any way associated with them may find the book of interest; others, very little.

The get-up of the book is good .

D.A.K.

Climax at Midway by Thaddeus V. Tuleia (J. M. Dent, London, 1960) 248 pages. Price 21 sh.

The epic battle off the Islands of Midway fought between units of the Imperial Japanese Navy and the Pacific Fleet will always be remembered as one of the most decisive and momentous naval engagements ever to take place at sea. After the murderous attack on Pearl harbour on the morning of 7th December, 1941, the Imperial Japanese Navy reigned supreme in the Pacific. The widespread offensive moves in the Western Pacific were unhindered, undisputed and unchallenged.

Little did the Japanese realise that the heyday of the 'rising sun' would be completely eclipsed in a matter of six months. Because on the 4th of June, 1942, the massive Fleet of the Imperial Japanese Navy suffered the most crushing defeat of the whole of World War II. Following within a month of the battle of the Coral Sea, where the scores were even, the Japanese ventured out to occupy the Midway Islands in absolute confidence. In the course of one single day the Japanese suffered the irreplaceable loss of four Fleet carriers, some 250 valuable aircraft and the pick of the pilots of the Japanese Naval Air Arm. This, therefore, was the climax.

It was the turning point in the war against Japan. The battle of the Coral Sea checked for the first time the Japanese advance. Midway put a stop to it. Though his Fleet was still greatly superior to Admiral Nimitz's in battleship strength than his carriers, Admiral Yamamoto no longer dared risk a Fleet action in waters outside the range of his land-based aircraft. Japan's attempt to expand her already overstretched perimeter proved an irretrievable mistake. In reaching for the shadow of further conquests, she lost the bone of naval supremacy without which she could not hold the vast area she had already won. She was never able to regain it.

The author sketches a very moving picture of the successes and tragedies and mistakes and failures of the battle. His description of the battle is replete with acts of personal bravery and heroism both by Japanese and American airmen and sailors. This certainly adds to the balance of the book. He has dealt adequately with the background and the aftermath of the battle.

The language and the style are typically American—light and lively. Patches of literary romanticism in which the author occasionally indulges do not, we have been assured, undermine the historical authenticity of the narrative. The book will be a very welcome addition to any library.

R.B.M.

History of the Second World War...The War at Sea: The Offensive by Captain S. W. Roskill (H.M. Stationery Office, London, 1960) 413 pages. Price 45 sh.

Originally chartered to cover the maritime aspect of the official British history of World War II in three volumes, the author has now rightly decided to bring out the third volume in two parts. The result, unlike the two previous volumes, is a comparatively small and more easily handled book.

The first two volumes covered the period of Britain's greatest trials and difficulties from the beginning of the war to the middle of 1943, by which time the Allies were poised to wrest the initiative from the Axis Powers. The volume opens with a detailed survey of the joint conduct of the war by Britain and America and the differences of strategic outlook and purpose and how

in spite of innumerable difficulties they took a joint decision and spared no pains to implement it. The book covers the period 1st June, 1943—31st May, 1944.

Here we see the assumption of offensive operations by the Allies in all the theatres of war. In the Mediterranean, the Allies successfully carried out three great assaults from the sea—against Sicily, at Solerno and at Anzio. The Japanese "defensive perimeter" was breached by American sea-borne assaults in the Solomon islands, New Guinea and in the Central Pacific.

The successes of the Allied strategy depended entirely on maintaining adequate maritime control. By the end of 1943, the German U boats had completely disappeared from the Northern Atlantic and now ranged in waters as far apart as the Arctic and the Indian Ocean. They, however, no longer posed a serious threat to the Allied Powers' war effort. The crowning success of the British maritime power was achieved just before the Solerno landings when the major part of the Italian Navy came under Allied control.

In telling the story of the maritime war, the author has given adequate weight and space to the contribution of the Allied Air Forces and has referred to the land battles and campaigns, which markedly influenced the maritime strategy and operations. He has given adequate coverage to the part played by the American Navy in achieving maritime supremacy in the different theatres of war, particularly in the Pacific. He pays them the greatest tribute when he says: "It will surely be agreed that for sheer imaginative conception, and tactical brilliance in execution, the Pacific offensive, which the power and the skill of the United States Navy made possible, have never been equalled".

He has maintained the same historical approach to events as in his previous volumes. He had unrestricted access to British archives and has taken full advantage of many of the German Navy's records that are now available. This unbiased account of the policies, purposes, successes and failures of the British maritime forces will be received with the same wide acclamation as its two predecessors.

R.B.M.

Power and Policy in The USSR by Robert Conquest (Macmillan, London, 1961) 485 pages. Price 35 sh.

To any one who does not presume to be well versed in the strange goings on in the Soviet Union, the sudden shifts of policy, the rapid rise and fall of greater and lesser luminaries of the hierarchy and sometimes their total disappearance into the night of forgotten things, the strident voices raised above the battle, are likely to give rise to a feeling of impotent perplexity. What is happening and why? What are the motives, what the causes? What are the policies and who the protagonists? These and similar questions arise and many a time go without a satisfactory answer. To Robert Conquest power struggle appears to be an endemic feature of Soviet politics.

Basing his analysis on massed evidence derived from Soviet official documents he patiently unravels the tangled skein. In the end one seems to carry away a disturbing impression of a political life red in tooth and claw.

The book is in the main the climatic story of the bid for Stalin's succession, going back in sequence of time to the last years of his rule. In doing so Conquest provides us with a series of insights into such obscure events as the Georgian purges and the special position of Beria, which reveal the mechanics of strug-

gle, the notorious Doctors' plot, which shows that the struggle for power had begun even before Stalin's death.

Yet it was only after his death that the gap had to be filled and the Soviet government adapted to the new conditions. He takes up this story highlighting in its course the fall of Beria, the rise and collapse of Malenkov, the ostracism of the Anti-Party Group, eclipse of Marshal Zhukov, finally through the famous 20th congress to Khrushchev's ascendancy. It should not be understood from all this that the book is limited to the careers of the chief protagonists. It also provides a good deal of information on minor dramatis personae and while doing so throws oblique light on such mysterious happenings as the Leningrad affair or the case of Comrade Voznessensky.

In all the plausible impartiality of the summing up and for all the careful precautions he adopts, has, one may ask, a convincing, irrefutable case been built up? Can the actors alone or the official documents alone provide all the clues? "In Soviet affairs", says Deutscher, "it is always easier to say What's What than Who's Who, because the issues do not change kaleidoscopically as do the personal alignments." In another, though similar, context, dwelling on the semantic nuances of Soviet statements, he also said, "The explanation of seemingly contradictory pronouncements cannot be found in the literal meanings of words in the Soviet press, but must rather be sought in the subtle, rather imperceptible shifts of emphasis in their arguments. It is also to be found in the state of mind and milieu in which they address. In the last resort the doctrinal controversy grows out of those moods; and they, the moods, form the sounding board that imparts a significant ring to the seemingly indistinguishable formulae that are bandied about." Robert Conquest, of course, is only too aware of the pitfalls, none better so. He produces data against his own hypothesis as well as in favour of it, and preludes his tentative conclusions with restrictive statements. "Kremlinology has a characteristic fault," he says, "from which other sciences are not indeed exempt. It is, after a theory has been developed, to attempt to fit refractory evidence into it by a series of subsidiary *ad hoc* assumptions. I am sure that this book is not free in practice as it is in intention of this habit." Indeed in the chapter on Questions of Evidence one is only too aware of the cautious, guarded and scrupulous manner in which he intends using the critical tools in interpreting the evidence.

The snag, however, is that all the available evidence is likely to lead one to mere impressionism. Not all the experts will agree that there was a link between Zhdanov and Titoism. The attempt to sort the present Central Committee of the Soviet Communist Party into proper or anti-Khrushchevites and independents will be regarded as the sort of guess that the author condemns. It is fairly well known that the 22nd Congress consecrated with dutiful unanimity Khrushchev's triumph by the final and formal condemnation of the "Anti Party Group" that had dared to lift their hands against him. Nor will they feel that the study is complete if one ignores the social groundswell of which the political alignments were only a visible manifestation. It is perhaps the social scene which in each successive period of world affairs emerges out of the economic conditions and governs political events. For this reason controversies over issues like agricultural policy or Khrushchev's managerial revolution, of merging State Tractor Stations with the co-operatives sound rather abstract when not set against Russia's economic development. In general the loosening of the bonds, the liberalising changes that have occurred since Stalin's haunting shadow appears to fall on the scene.

On her death bed Gertrude Stein is reported to have asked: "What is the answer?". After some time raising herself in bed, she asked: "What is the

question?" The question, of course, we know. But what is the answer? Robert Conquest at best provides only a partial and therefore an incomplete one. By deliberately limiting the scope of his enquiry, which is a pity, he reduces the impact of an otherwise interesting book and makes it a minor contribution to the study of Soviet history.

M.J.R.

Imperial Peking by Lin Yutang (Elek Books Ltd., London, 1961) 227 pages. Price 63 sh.

Cities like rocks grow by a process of accretion and if by fortunate circumstances they survive they accumulate a patinated history of their own. Now that China has rung the iron curtain on the foreign tourist, a special effort has to be made to keep alive the memories of those lucky few who have seen its storied cities or bring home to those less lucky the glory that is Peking, the most fascinating of them all.

Lin Yutang takes up Peking's imperial theme and in his sumptuously got-up book tells us all there is to be known about it—its curried countryside, its hutongs, coffee houses and restaurants, its colourful palaces, gardens, pagodas and temples, its art and architecture, its people, their customs and beliefs.

The concentric city of Peking was originally located and planned according to geomantic rules, that ancient science governing the selection of auspicious sites. As a result, Peking was sited in a plain guarded from the north-westerly winds by the mountains, irrigated by a miraculous stream which emerges at the Jade Fountain, and tempered all the year round by wonderfully clear and balanced weather.

The location having been mystically established, the city plan was arranged with the same regard for the occult. Laid out in the days of absolute empire it was planned less as a city in our sense of the word than as a home for one man, the Emperor, the Son of Heaven. The city walls were carefully aligned to the four quarters—north, south, east and west, and in Peking where the Emperor sat, the central direction took on a significance it could have in no other place. The Forbidden city thus came to be the hieratic setting for one man, the centre of an arranged universe.

I suppose that the idea that persistently materialized behind its walls was that of a fabulous fragile China of legend, the China of jade and vermilion pavilions, the faraway azure land, the heaven that poets, prophets and potentates have struggled to construct. It would appear from this book that it is only when one is in Peking can one come as close to it as any one of them.

Besides the justly famous palaces, its temples are also objects of beauty, notably the Temple of Heaven, the finest of them all, "the most beautiful single piece of creation in all China, greater than her pictorial art". "Its total emotional impact on the spectator comes from its perfect proportions and colour and its harmony with the azure sky above coupled with the religious awareness of monotheistic worship which it inspires."

Peking too was the home of arts and crafts using silk, jade, ivory and lacquer. The common characteristic of its handiwork being smoothness of touch just as the best loved gastronomical delicacies were glutinous in nature. In the development of ceramics, for which China is justly famous, "the Emperors gave the artists a tremendous impetus to create works of beauty and

delicacy". The result was the exquisite artistry of the Ming vases, the 17th century Peach Blossom vase, the modelling of Fukien potters in blanc-de-chine porcelain.

The secret of the delicacy of the Chinese art of line painting lies in its calligraphy, whose beauty is not static but dynamic, imbued with "rhythmic vitality". "It is the beauty of movement and not proportion". The most striking feature of Chinese calligraphy is its dislike of symmetry and its happy ordering of space.

As for the people of Peking they still display, Lin Yutang tells us, certain innate qualities which Marco Polo observed long ago. "Their style of conversation is courteous", said Marco Polo of them, "they salute each other politely and with cheerful countenance, have an air of good breeding and eat their food with particular cleanliness. To their parents they show the utmost reverence."

The people have the strength, honesty and an earthy humour. The tempo of life has always been slow and the essential needs of life simple—a good home, a simple way of life, family loyalty, a good bed, enough bowls of rice and an allowance of human foolishness.

There is much besides all this for the curious reader. There are the hutungs (alleyways) with charming names like "The Lamb's Tail", "Ox Horn", "Sweet Well", "Back of Bow", "Wet Nurse". An exclusive chapter is devoted to the war lords, dowagers and concubines. The gourmets are regaled on the renowned Peking Duck. "What goes with it is the not too humane force-feeding of the ducks. The birds are kept in the dark, and a kind of nourishing dough is forced into their throats at intervals, more than the animals really want. In this way their weight grows faster and their meat is tender".

Even though in places it smacks of the tourist guide-book, Imperial Peking is good reading and a good buy, if not for anything else, at least for its 52 opulent, eye-ful, superb colour plates.

M.J.R.

Constitutional Development in Pakistan by G. W. Choudhury (Longmans, Green & Co., Lahore, 1959) 272 pages. Price Rs. 8.

With the announcement of the completion of the Constitution Commission Report, the constitutional history of Pakistan appears to have entered into a new phase i.e. that of constitutionalising the present political structure as well as the concept of Basic Democracy already operative in the State under President Ayub Khan. The background of this phase is no less significant for a thorough understanding of the new constitution because it brings into limelight the actions and interactions of several factors and forces which ultimately brought into being the martial regime in October 1958.

In this context, Mr. Choudhury's book is a valuable contribution to the literature on constitutional developments in his country. Originating from his doctoral dissertation which forms the major portion of this study, the book is an objective and painstaking study of the genesis of the first Constituent Assembly, its salient features, the reasons that led to its dissolution, the convening of the Second Constituent Assembly and lastly the constitution as it finally emerged in January 1956.

The purpose of the book, as the title indicates, is not to provide a legal commentary on the clauses of the constitution but to present a succinct account

of the constitutional developments of Pakistan in the background of its political perspective. Here again, the author does not get lost in eulogising Pakistan as a nation state. Rather he critically examines the various reasons which were responsible for the delay in the drafting of the constitution. The lust for power amongst the politicians, corruption in public life, regionalism and provincialism, the fear psychosis of Muslims versus Hindus, of East Pakistani vs. West Pakistani are some of the factors which affected a great deal the political stability of the nation. However, what seems to be a striking feature is the capacity of the constitution makers to evolve compromise formulas amidst a welter of conflicts. That even these formulas could not be implemented can be explained by the political stalemate in the country. Dr. Choudhury is no less aware of the acute political malady of the body politic and consequently frankly admits that though democracy as an ideal had never been disputed, it is doubtful if the Western oriented democracy could function effectively in the absence of congenial socio-economic conditions which make it a success as a political institution. According to the author, the abrupt introduction of adult franchise without "any marked expansion of adult education", the great gulf between the ruling elites and the ordinary citizens, the dominance of emotion rather than reason in political life, the centrifugal influence of provincialism have "converted parliamentary democracy into a farce". How far the new patterns of democracy are 'Guided' and 'Basic' and to what extent are they going to yield goods in the Asian context is too early to decide.

U.P.

Algeria: Rebellion and Revolution by Joan Gillespie (Earnest Bern, London, 1960) 208 pages. Price 27 sh.

This book, submitted as a Ph.D. thesis at the Fletcher School of Law and Diplomacy is a study of the growth and development of Algerian nationalism and the conflict in Algeria.

The book is divided into three parts. The first deals with the coming of European settlers, their political and economic domination and how this influenced their outlook and created the gulf that separated them from the Algerian Muslims. The second part traces the growth of the Algerian nationalist movement and shows how moderate nationalists drifted towards extremism, while rift within the extremist MTLN led many of its supporters to break away and form the Revolutionary Committee for Unity and Action that led the Algerian revolt. The third part is a study of the organisation, methods and strength of the National Liberation Front. There is a detailed study of the Soummam Conference held in 1956 that formulated the principles and programme of the movement. We learn of the differences between the internal leaders who conducted the revolt within the country and the external leaders who helped to secure aid from other countries and projected the conflict on the international scene.

The author concluded that the independence of Algeria is "only a question of time." The Algerian government, according to her, would be an Arab Muslim regime not xenophobic "but not disposed to give anything more than equal treatment to the *colon* who accepts Algerian citizenship". It would be a kind of "directed democracy" and Algeria would dominate the Maghreb and evolve a common policy with her neighbours.

While the author admits that she has not fully analysed French policy in Algeria, she has given a balanced, fairly comprehensive and objective account

of the Algerian nationalist movement. The book is a welcome and timely addition to the "Nations of the Modern World" series though it is a pity that death has prevented the author from seeing the end of the conflict in Algeria and its emergence into independent nationhood.

R.N.D.

Gangs and Counter-Gangs by Major Frank Kitson (Barrie & Rockliff, London 1960) 211 pages. Price 25 sh.

This book by an army officer, who was posted to Kenya during 1953, deals with his experiences and methods employed to combat the Mau Mau revolt. Appointed as a Military Intelligence Officer the author, to begin with, was not sure of his duties and we find him running to every place of incident to piece together information. Gradually he, along with his colleagues and assistants, evolved the idea of organizing pseudo-gangs of loyal Africans who would mingle with real gangs of the Mau Mau to secure information and help in their destruction. These pseudo-gangs included ex-Mau Mau men incorporated after careful observation. Hooded men were also used to identify Mau Mau followers from among the detenus. The book contains descriptions of many incidents, encounters between the author and his men and the Mau Mau gangs and their escapades. It concludes with an account of successful operations against Wariungi, the Chief Mau Mau leader in the Kiambu district. There are a few charts showing the organization of the Security forces and the Mau Mau organization in Nairobi. A number of photographs of pseudo-gangs with their faces balckened out to prevent identity are interesting additions to the book.

The author, however, confesses that he does not know the answer to problems of race relationship and African nationalism and makes no attempt to deal with the political aspects of the Mau Mau problem.

R.N.D.

The Camels Must Go: An Autobiography by Sir Reader Bullard (Faber and Faber, London, 1961) 300 pages. Price 25 sh.

Of late it has become customary for the *emmenes grises* of the British diplomatic world to seize the first opportunity after retirement to enlighten the world on what goes on behind the rather dull facade of cryptic communiqués, protocol and the inevitable cocktail parties. On such occasions one naturally tends to justify oneself—if not always one's government—and to show off. Bullard's autobiography seems to be an exception to this in that he does neither.

Bullard started his career in 1908 as a Consular Assistant in Turkey and retired in 1946 after being British Ambassador to Teheran for six years. In between these two points he served in Iraq, Saudi Arabia, Greece, Soviet Union, Morocco, Persia and a host of other countries. But most of the time he served in West Asia; and thus saw from close quarters the great transformation which the area had undergone in the course of some forty years.

He arrived in Turkey just in time to see the last few weeks of the autocratic regime of Sultan Abdul Hamid which came to an end suddenly and unobtrusively with the appearance of an unexplained notice in the press on 24th July 1908, saying that the Sultan had decided to summon the *Majlis* (Parliament) as provided in the Constitution of 1876. With that the slave eunuchs, the street dogs and the ubiquitous spies—all symbols of the old regime—suddenly

disappeared from the streets which now resounded to the cries of Liberty, Justice and Equality. From Istanbul he shifts to Basra and sees the atmosphere on the outbreak of the First World War, the advance of the Indian Expeditionary Force 'D' into the Persian Gulf and the British conquest of Iraq. He describes the humble beginnings of the now stupendous Iraq oil industry. It all started at Tuz Khurmati in the spring of 1918. To supplement his meagre municipal revenue Captain Longrigg farmed out the right to collect and distil the crude oil that seeped out of the earth here and there in the town of Tuz Khurmati. The additional income which thus accrued was some £2 a month. From this very source Iraq now collects something like £100 million a year.

Perhaps the most interesting chapter of the book is the one dealing with his last assignment at Teheran during the crucial years 1939-46. In a way Bullard's autobiography is also the story of how the British built up, step by step, their power and position in West Asia during the first half of the current century. He retired just at the beginning of the reverse process of withdrawal. This he tackles briefly in the epilogue. But Bullard does not waste his time—and of the readers—wailing over the loss which was inevitable. He has, however, a piece or two of advice to the peoples of West Asia. The one remedy to their social and political maladies, he suggests, is local not parliamentary democracy. To the Persian critics of British policy he says: "You Persians really are too suspicious. In Britain children ask each other riddles. One of them is 'Why does a chicken cross the road?' the answer is 'To get to the other side'. But if I ask you why a chicken crosses the road you would say 'Ah, that's to make you think he wants to get to the other side'."

The dominant note of Bullard's life story is modesty. "It would not be surprising", he concludes, "if I were remembered, not for any impressive quality, but for severe economy, not to say meanness, in the use of stationery, public and private, to the point of using old envelopes over again. Well, maybe as a result some lovely tree may wave its branches in the wind for a day or two longer, before being turned into pulp."

M.S.A.

The World of Islam Studies in Honour of Phillip K. Hitti. Edited by James Kritzeck and R. Baylywinder (Macmillan, London, 1959) 372 pages. Price 50 sh.

This is a collection of essays written by various research students in honour of Phillip K. Hitti, a renowned scholar of Islamic and Near Eastern Studies. The book is divided into three parts and covers a wide range of subjects. The first part consists mainly of studies on Islam with a chapter on differences and similarities between it and Christianity. The second part "The World of Medieval Islam" contains a study of Ridwan The Saljuq ruler of Aleppo in the eleventh century and an account of the fall of Baghdad in 1258 to the Mongols based on the account of a contemporary writer Ibn-al-Tiqtaqa. There are biographical notes on Al-Hakim al Tirmidhi, a religious teacher whose writings appeared to have had great influence on Sufism and a discussion on Ibn Rushd's *Kitab Fasl al-Maqal* known to be the most profound defence of philosophy in Islamic literature. A discussion of language is based on writings of Ibn Khaldun, the 14th century Tunisian historian and sociologist. The third part dealing with "The Modern Near East" contains many diverse studies. These include a study of postage stamps of West Asian countries, a detailed account of educational system of Bahrein and an interesting study of Arab emigrants to the United States. There are

two chapters on Arab unity and ideological influences in the Arab revolt. All the studies carry a large number of footnotes and reflect a high standard of scholarship. A biographical sketch of Phillip K. Hitti is appropriate and a Bibliography of his works adds to the usefulness of the book.

R.N.D.

The Soviet Union And the Middle East by Walter Laqueur (Routledge & Kegan Paul, London, 1959) 366 pages. Price 35 sh.

In view of the political transformation of West Asia during the decade, this book is a timely and useful contribution to the literature on foreign relations of West Asian States. It is a study not only of the official relations of the Soviet Union with West Asian States but also a study of Soviet views on developments in West Asia. The author stresses that all attempts to account for Soviet foreign policy without due regard to ideological factors are ultimately futile and in the first part of the book discusses the evolution of Soviet thinking regarding West Asia. With the help of writings of Soviet specialists he brings out the ideological issues and views advocated regarding developments in West Asia and the changing approach to nationalism in the region with the change in the party line.

The second part of the book 'The Great Breakthrough' starts with the change in Soviet thinking after Stalin's death when an alliance with 'national bourgeoisie' in Asia began to be considered desirable. But the author rightly points out that Soviet success in the Arab world could not be attributed to this alone and was a result of the emergence of a political situation which made some Arab leaders consider an alliance with the Soviet Union desirable. One is in agreement with the author that the Egyptian arms deal of September 1955 was "the great divide" that marked the turning point in the relations between the Soviet Union and the states of West Asia. It is, however, arguable whether it was the 'dynamics' of domestic circumstances that drove President Nasser to follow a policy of friendship with the Soviet Union or it was western policy that led him towards such a course.

As the book was published in 1959 it does not cover the deterioration in relations between the two countries consequent to Syria's merger with Egypt. The author, however, concludes that the alliance between Russia and the Arab "bourgeois" nationalism is not likely to last and that Arab movement for unity would be supported by the Soviet Union as long as it can be used as a weapon against the West.

R.N.D.

Three Kings in Baghdad by Gerald De Gaury (Hutchinson, London, 1961) 232 pages. Price 25sh.

The author of this book, an English army officer, was a close friend of the three Hashimite Kings—Faisal I, Ghazi and Faisal II—who ruled in Iraq between 1921 and 1958. In this book he sets out to evoke their character and to revive something of the atmosphere in their days. Though political events find mention in the book, the author has dwelt more on the human side of the story telling about the likes and dislikes and desires and interests of these kings rather than describing their rule. Interspersed in the narrative are author's personal reminiscences of meetings and conversations that throw light on the

character of other notables and personalities of the time, e.g., Gertrude Bell, Abdullah, the regent, Amir Abdullah and Nuri Said. A friend of the family, the author writes with sympathy and understanding. In the final chapter he gives a poignant account of the eventful month of July when the army violently put an end to the Hashimite rule in Iraq. An interesting and readable book.

R.N.D.

A Modern History of the Sudan by P. M. Holt (Wiedenfeld and Nicolson, London, 1961) 241 pages. Price 27 sh 6 d.

The title of the book suggests that it deals with the modern history of the Sudan. Instead, nearly half of it is devoted to the period before the Condominium Agreement of 1899; a period mediaeval in its socio-economic and political character. The Funj Sultanate (16th century onwards) and the Egyptian conquest in the early 19th century did not herald the era of modernism in the Sudan. The Mahdiya Revolt of 1880's and the subsequent rule of Khalifa Abdallahi were definitely not modern in character. Thus, the author, in attempting to give a brief background to the modern Sudan, is lost in its mediaeval history and fails to devote adequate space to the contemporary period of the Sudan which actually represents the modern era in the history of that country.

In his analysis of the Mahdiya Revolt, the author has belittled the role of the Sufi orders then prevalent in the Sudan and also the easily inflammable primitive Islamic traditions of the tribal people which led to the initial success of the revolt. These factors continued to influence the Sudan even during the reign of Khalifa Abdallahi. The *Ansars* who fought and died in thousands in the battle of Omdurman died for the sake of religion and not to safeguard Abdallahi's reign against the Anglo-Egyptian invasion.

The Condominium period is treated at length. The development of the political consciousness among the Sudanese is also traced. The author terms it as the "Rise of nationalism in the Sudan—1934-52" (Chap. X). Thus, he equates the rise of nationalism in the Sudan with the rise of the Sudanese nationalism which is not true. The concept of the Sudanese nationalism at that time was in the nebulous stage. The unity of the Nile Valley was still the dominant slogan which fetched a majority of votes to Ismail al-Azhari and his party, the National Union Party, in the 1953 elections. Probably the slogan was only of a tactical nature as is suggested by the author and was later on abandoned by Mr. Azhari himself but there were several reasons for it: the rift in his Party, the overthrow of President Nguib in Egypt and the growing opposition to this policy by the *Ansars* being the most important.

Another point which Mr. Holt brings out very lucidly in the "crisis of confidence" after the assassination of the Sirdar, Sir Lee Stack in 1924. The Britishers lost confidence in the educated and progressive minded Sudanese and began to give greater support to the tribal, feudal and religious authorities in the Sudan. They built up Abd al-Rahman al-Mahdi, the posthumous son of al-Mahdi as a counterpose to the pro-Egyptian elements. This unhealthy development gave rise, in the subsequent years, to the rivalry between the pro-Egyptian *Khatmiyya* sect and the anti-Egyptian *Ansars*. This rivalry continues to plague the Sudanese politics even today.

The author has some very harsh words for the political parties and the parliamentary system in the Sudan in the post-independence era. According

to him it was characterized by factionalism rather than party politics, and its debased quality was to be used as a justification of their actions by the soldiers who ended it. (page 172) He goes on to say: "Under Abdullah Khalil in 1958 the tactics of the party management were exhausted and the bankruptcy of the parliamentary system itself stood revealed. (page 180). Yet, it must be noted that just before General Ibrahim Abbud dissolved the Parliament and took over the administration, the two most important political parties, the *Umma* and the National Union Party, were showing signs of rapprochement. Thus, the author's statement that the Sudanese parliamentary government on its extinction "found no defenders, and required no martyres" seems a little far-fetched. It must also be remembered that unlike Egypt or Iraq, the military *coup d'etat* in the Sudan did not evoke popular acclamation.

The author has given a chapter-wise bibliography of English books which would facilitate further study if the reader so desires. But, he misses a few books like the *Sudan Question Based on British Documents* by Abdel-Moneim Omer, Cairo, 1952, which gives the Egyptian point of view. Also, some recent books like *Sudanese Egyptian Relations* by Abd el-Fattah I. S. Baddour, the Hague, 1960, and, *The Independent Sudan* by Mekki Shibeika, New York, 1959, have not been included.

On the whole the book is a good attempt. The style is easy, opinions are frank and often unbiased. The "Afro-Asian series" which sponsored this book should be congratulated on this brave venture.

K.R.S.

How to Think and Swing Like a Golf Champion by Dick Mayer (Macdonald, 1958) 191 pages. Price 15 sh.

Dick Mayer's book is well written and easily understood, which is a basic requirement for books on Golf, as there are already too many on the market which try to explain the subject of Golf in a most complicated manner.

Dick Mayer has been a very successful golfer and although he is not quite in the same category in technique and ability as Ben Hogan or Sam Snead, he is easily among the world's top golfers of the last decade; as such what he has written commands attention. He lays great emphasis on the beginner's biggest error which is a poor grip, and leads on from there to developing a reliable swing. From these fundamental requirements follow the refinements of the game and each aspect is analysed systematically and diligently.

However, for anybody wishing to improve his Golf, mere reading of this book will not produce the desired result and what is written in the book has to be practised on a Golf course. The author stresses this point when he compares Golf to learning the Piano—"at the start you have to watch the keys. But with practice you can soon forget the fingers and concentrate on the music." Practice, as in everything and Golf is certainly no exception, makes perfect.

K.C.K. ✓

CORRESPONDENCE

Correspondence is invited on subjects which have been dealt in the Journal, or which are of general interest to the Services

To the Editor of the USI Journal

'AFTER PARADE HOURS'

Sir,

I would request the indulgence of your columns to express my views on the 'Use of Armour After Parade Hours' (USI Journal, July-September 1961).

A summary of the conclusions drawn by the author would not be amiss at this juncture. They are—

- (a) The use of tank by night would be an invaluable asset. To quote: "A fraction of a tank's potential, if made available at night, can affect the balance of power on a battlefield."
- (b) Use of tank at night should be more enterprising and not restricted to either as stationary 'pill boxes' or to night moves carried out with the intention of a subsequent first 'tank light' action or a day action. To quote: "The use of tanks at night in World War II was restricted to moving them behind the anti-tank defences to gain surprise. Such tactics, though valuable, rely on surprise and not the firepower or other characteristics of the tank for success."
- (c) In the use of artificial light during night operations. "Artificial moonlight and Infra red devices are not worth the money and effort required". Instead the use of direct lights should be tried.
- (d) Intensive night training for tank crews is not required. Instead, "special equipment will have to be devised if Armoured Corps personnel are to be introduced to night operations."
- (e) "Implications of Armoured Corps trade union hours." But of this more later.

I agree with the author that the use of tank at night is an invaluable asset. But how? In trying to find an answer to this, I disagree with most of the other contentions. Let me put forward my viewpoint.

Firstly, regarding the use of tanks in roles other than either purely defensive or purely for penetrating enemy defences by carrying out night moves. The author has not elaborated on how tanks can be used at night. If however we are to gather from the trend of his argument that tanks with the help of 'special devices' should be used more or less in the same way as they are during day, the contention can hardly be supported. No 'special device,' however 'special' it may be, can possibly give the tank that same ability to move and fight during night as during day. What can it do therefore at night? Firstly, tanks can move at night and with a fair amount of efficiency, lights or no lights. Tanks with lesser efficiency can also fire at night. But tanks cannot (and for that matter need not) carry out fire and move at night—except perhaps in the brightest of moonlight—and then also it will be a very unsatisfactory form of fire and move. So, basically, the tank should concentrate on two things: its ability to fire at night, with or without artificial lights, and again with or without lights to move fairly long distances and then be ready to fight the next morning. To gallantly try and do anything more complicated is suicidal.

Further, to logically develop the above, how can even a semblance of skill at these requirements be achieved without intensive training? The author would have no resort to 'special devices'. In my opinion the best device is training. Further, this need not be carried out at the expense of either sport or administration or technical training and least of all of course for 'bull.' Night training can very well be incorporated in both individual as well as collective training periods and need not be just "two or three night exercises carried out in the "Good-ACR-or-bust spirit"!

Use of tank searchlights to fire at night is efficient and reasonably accurate fire can be achieved up to 1500x. I would not completely rule out the use of star shells on the argument that the advantage is thus gained by both sides. A tank firing from a suitable firing position which has been selected during day, as will be the case in defence, is not a vulnerable target and the advantage of the star shell definitely lies with the firer. Tanks, we must accept, will have to fire from stationary positions at night, and in my opinion no amount of training in this respect can ever be considered expensive, or the concept of such training a 'fallacy'.

And finally, the 'Trade Union Hours'—a peep at the manner in which these hours are utilised is, I think, worth the trouble. The activities, of course, cover only the very limited sphere of a troop leader.

If this troop leader is lucky, he will be ordered into harbour between 18-30 and 19-00 hrs. If his luck holds, his troop's march back of 3 to 4 miles may not be impeded by troops coming forward. In that case, he will make better speed and may reach the harbour within about 30 minutes. We must remember his troop is moving in the dark. At approximately 8 at night, he is therefore in the harbour. His immediate task is refuelling, re-stacking ammunition and carrying out essential tank repairs. Mark the activity of the union please. It might also not be out of place to specify that refuelling may involve filling up anything between 100 and 150 gallons of petrol per tank depending on the equipment which that particular branch of the union looks after. The troop's share of the harbour defence is also being carried out simultaneously. This, incidentally, involves digging also, lest it be thought that digging is the forte of the infantrymen only. Minor repairs may at times even involve changing of bogies or broken track links. To avoid making things technical, let it be understood that this kind of repair is only minor in name. In spite of all efforts this may at times take up to 3 to 4 hours. So, on a conservative estimate, it is about midnight by the time our troop leader can think of his own. He has, in this time, depending on the training imparted to him, either been able to arrange food, night shelters and to pass his order for the next day or he has not been able to do so. It may therefore take another hour before rest for the night is ordered. The troop next day may have to cover a much longer distance to reach the battlefield; harbour in any case must break before first light, and so our troop leader, to move and be at his battle position at the right time, is normally up by about 4-30 in the morning. But a union is after all a union and no further insight is warranted.

Lest it be thought that this is bemoaning with all vehemence, it is asserted that it is NOT. We enjoy every moment of this and would not change it. But we would definitely always vote for more and yet more night training.

I sincerely hope this starts a lively correspondence in your columns!

Your truly,
'TROOP LEADER'

SECRETARY'S NOTES

MEMBERSHIP

During the first quarter of 1962 we have enrolled over 42 new members and messes. It has, let me add, been largely due to the enthusiasm of members in persuading their brother officers to join. We cannot, however, afford to slacken our efforts in this direction as our membership is still very low. We must continue our efforts to make every serving officer to become a member of this Institution. In this campaign every member can help.

MESS LIBRARIES

Although it is gratifying to know that more and more officers have joined the Institution, it would be helpful if these members in Messes which do not subscribe to the Journal would persuade the President of their Mess Committee to add this Journal to the periodical, available in the Mess. Thus, our readers' circle would be greatly increased, useful information contained in articles would reach more officers, and the influence which the Journal can exert would be correspondingly increased.

ANNUAL SUBSCRIPTION

I would like to thank all those members who paid their subscription so promptly at the beginning of the year. To those of you who have not yet paid, may I remind you that your subscription was due three months ago on the 1st January. Would you please, therefore, put a cheque in the post to me TODAY. There are some members who have also to pay their subscription for 1961. They are requested to make the payment for both the years to avoid unnecessary reminders.

SUGGESTIONS FOR THE JOURNAL

The USI Journal is in its ninety-second year of publication. As you will, no doubt appreciate, the Institution spends a great deal of its funds on producing this publication. We would like to have your comments, criticism and suggestions so that we may improve this publication to meet your requirement.

LETTERS TO THE EDITOR

We wish to develop this feature in the Journal, so if there is any point in its pages on which you feel you would like to send me a letter for publication, do please send it along. It might be a letter of commendation on an article, or you might disagree with the conclusion of a writer. Whatever it is, send in your letter and I will endeavour to get it in. Letters should be as brief as possible and should be sent to the Editor, USI Journal.

LIBRARY

An extensive library is available for members of the Institution at Kashmir House, New Delhi. Members stationed outside New Delhi may receive books on application; they will be sent post free by registered parcel post, and must be returned within two months, or immediately on recall. No more than three volumes may be issued at any one time. Reference books and works marked "Confidential" may not be removed from the Library. If after the expiration of three weeks from the date of issue a book is wanted by another member it will be recalled. Should a book not be returned within fourteen days of the date of recall, it must be paid for, the cost of lost defaced books being refunded by the member to whom they were issued. Such volumes which have

become out of print will be valued by the Executive Committee, the member being required to pay the cost so fixed.

A catalogue of books may be obtained on payment of Rs. 6/- per copy, plus postage.

OLD BOOKS AND TROPHIES

The Institution is in possession of a collection of old and rare books presented by members from time to time and while such books are not available for circulation, they can be seen by members visiting Delhi. The Secretary will be glad to acknowledge the gift of books, trophies, medals, etc., presented to the Institution.

LOAN OF LIBRARY BOOKS

Members are requested not to pass on the books which they have borrowed from the Library to their friends. This delays return of books to the Library and causes unnecessary inconvenience to other members, on the waiting list.

GOLD MEDAL ESSAY COMPETITION 1960

No medal was awarded for the year. Seven entries were received. On the recommendation of the judges the Council awarded cash prizes as follows :

Winner	...	Brigadier R. SAWHNY	Rs. 250
Runner-up	...	Instr. Lt.-Comdr. K. R. RAO, IN.	Rs. 150

REVISION/CORRESPONDENCE COURSE—DSSC

(Army Wing) Entrance Examination 1962

United Service Institution of India will run the following for the Defence Services Staff College (Army Wing) Examination at their premises, Kashmir House, King George's Avenue, NEW DELHI:

Course	Dates	Capacity
(a) 1st Revision Course (*)	20 Aug. 29 Sept. 62	75 students
(b) 2nd Revision Course	8 Oct. 17 Nov. 62	75 students
(c) Correspondence Course for TACTICS B only	15 Jul. 62 onward	150 students

Note :— (*) Preference for the 1st Revision Course will be given to students in Delhi.

Revision course will be of six weeks duration inclusive of all holidays.

The USI has no arrangements for accommodation and transport. Students will make their own arrangements.

Correspondence Course for TACTICS B only will cover eight appreciations in the various operations of war.

The above courses are open to members of USI only.

The fees for the courses will be as follow:

(a) Revision Course	Rs. 100.00
(b) Correspondence Course (Tactics B only)	Rs. 50.00

Applications from officers desirous of attending the courses must reach the Secretary with the required fee in advance by 30 May 62. Further details will be forwarded to students separately after receipt of applications.

NEW MEMBERS

From January 1 to March 31, 1962 the following members joined the Institution :

ANAND, Captain S. K., The Jat Regiment.
ANAND, Captain V. J., Artillery.
AWASTY, Major V., The Guards.
BALWANT SINGH, Captain, The Punjab Regiment.
CHOPRA, Captain R. C.
DIWAN, Lieut. S. K., A.S.C.
DUTT, Major S. K., E.M.E.
DUTT, Captain Surinder Kumar, The Assam Rifles.
GIAN SAGAR, Captain, Engineers.
GILL, Captain K. S., Engineers.
GROVER, Captain B. P., Artillery.
GUPT, Captain P. K., Artillery (Life).
GURDEV SINGH LEGHA, The Mahar M. G. Regiment (Borders).
HANDA, Captain K. N., Artillery.
JASWANT SINGH, Captain Signals.
JOSHI, Major B. S., The Rajputana Rifles.
KAPOOR, Captain P. K., The Mahar M. G., Regiment (Borders).
KAPOOR, Captain S. V., A.O.C.
KAUL, Lieut.-Commander R. K., I.N.
KAUSHAL, 2/Lieut. K. L., The Maratha Light Infantry.
MEHDIRATTA, Captain S. P., Artillery.
NAHAR SINGH, Captain.
NARAYANAN, Captain V. L., Signals.
PATTANAYAK, 2/Lieut. B., E.M.E.
PHANSALKAR, Captain N. B., Signals.
RAISINGHANI, Major R.C.P.
RANADE, Captain M.B., Artillery.
SACHDEVA, Major J. C., E.M.E.
SAGAR SINGH, Captain, The Dogra Regiment.
SHARMA, Lieut.-Colonel M. L., Engineers.
SHARMA, Captain S. K., 3rd Para.
SONI, Captain R. N., Artillery.
SUNDARAM, Major V.
TEWARI, Captain B. M., The Dogra Regiment.
THOSAR, Captain P. G., Engineers.
TYAGI, Captain K. C., Engineers.
VARMA, Captain S. P., Artillery.

Four Officers messes and institutions were enrolled as subscribing members during this period.

GUERRILLA WARFARE—A BIBLIOGRAPHY

By K. R. SACHDEVA

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EDITORIAL

✓ HEROIC ENDEAVOUR

THE second Indian Everest Expedition has proved once again that as long as youth and adventure go together, winds may blow and waters roll, only to give strength to the brave. Having climbed up to 400 ft. of the summit, the team led by Major John Dias had to give up its attempt due to heavy blizzards of snow and extremely bad weather conditions. The team, which made a heroic and glorious effort in extremely difficult conditions, has taken the whole expedition as a sport; and characteristic of the spirit of the team, the leader rightly affirmed that just as in a sport one has to lose sometimes, he would rather like to say that they had "lost and not failed" in the expedition.

This second expedition has further proved that scaling the Everest is conditioned by many "ifs" and favourable climatic conditions play a major role. The Indian assault on Everest would have been successful had there been "four more hours of fair weather" on the fateful day of May 30, when the three-man summit team—Lt. M. S. Kohli, Sonam Gyatso and Hari Dang—made the final bid. The trio spent three consecutive nights at the last camp at a height of 27,650 ft., more than half the time without oxygen, an unprecedented feat in the history of mountaineering. Another member of the expedition, as also a Sherpa, were at South Col (25,850 ft.) for six consecutive nights, again without oxygen most of the time. Fifty-three-year-old Sardar Ang Tharkay carried a full load to the last camp and none so old had reached this height of 27,650 ft. ever before. Suman Dubey, the youngest member of any Himalayan Expedition, only 19 years old, had spent three nights on South Col. Although it

was not the intention of the Indian Expedition to set up records, these feats of courage, perseverance and endurance will be hailed as unparalleled records in mountaineering history.

Though final success eluded Major Dias' brave band of mountaineers, who were dogged by bad luck from the very beginning, there is no cause for disappointment; for, as Brigadier Gyan Singh, leader of the first Indian Everest Expedition, remarked: "You have done your best, you cannot do better." It is no formal praise, therefore, that the President, the Prime Minister and the Defence Minister have bestowed on the team for their great courage and heroic effort.

Mountaineering has made steady progress in our country since the days of Tenzing's success, as the work of the Himalayan Mountaineering Institute amply testifies. Hardy men from the Armed Forces have played a leading part in these activities which have been also emulated by many civilian enthusiasts. During the brief period of only seven years of their mountaineering activity, Indian climbers have already added a glorious chapter to the annals of adventure and exploration in the land. As the Defence Minister, Shri V. K. Krishna Menon, pointed out recently, five successes have been scored by Indian teams last year alone, which included Army personnel. It is gratifying to note that this country had sent more expeditions to the Himalayas than any other country had done since mountaineering was organised half a century ago.

One could only hope that India's third attempt will have better luck.

CHINESE HIMALAYA POLICY: AN ANALYSIS

By Lieut-Colonel M. R. P. VERMA

TO assess the complex problems that have arisen out of the incursions into Ladakh, the North-East Frontier Agency (NEFA) and other threats along the long Himalayan border of China and Tibet with India, Nepal, Burma, Sikkim and Bhutan, and to anticipate future courses of action, it is necessary to examine the history of the rise of Chinese Communism, the outlook, history and culture of China, as well as the Chinese Communists' doctrinal differences with Russia.

Clearly, the present rulers of China have established a firm grip on the country which had suffered decades—indeed generations—of war, anarchy and gross misgovernment. Most of the population has become accustomed and inured to bitter civil war for as long as it can remember so that a further outbreak arouses little interest. The difference today is that China is under the iron control of highly dedicated and ruthlessly determined leaders bent on the rebirth of China and nothing less than parity with the United States of America and the Union of Soviet Socialist Republics. China's immediate problem is national reconstruction and the satisfaction of the minimum necessities of life. There is famine, sickness and an inadequate industrial base; conditions are worse than they were in Russia in 1917.

Why, then, under such conditions of difficulty, should China consider it either appropriate or expedient to antagonise and alert all her southern neighbours by physically laying claim to a mere 40,000 square miles of mainly snow-bound, barren mountains, an almost unpopulated wilderness that confers little economic or other advantage worth the name? The answer is not self-evident and has been missed or glossed over in most commentaries on the subject.

The answer to this Chinese puzzle lies in unravelling the rise of the present regime there. At the same time, this analysis reveals far more catastrophic dangers unless the expansionist tendencies of the young Communist State are thwarted at all points. The shots fired at Hot Springs and Longju are only "warmers" fired into the butts and not at the target itself. Both incidents are—except to the relatives of the unfortunate victims—trivial in themselves, but they fit into an overall plan that would threaten our independent existence as a great nation.

THE BACKGROUND

China is the most populous State in the world. Her population exceeds seven hundred million; she has a fast-rising birth-rate that fails to respond to Communist edicts on family limitation. China does not lack land for agricultural expansion, nor minerals for general economic development. Since time and history began the strength and power of China have been dissipated and nullified by continual internal strife; her cities have been sacked, bombarded, looted and destroyed repeatedly; her treasure was carried off by a series of foreign invaders; her works of art—all of which are unique and of surpassingly delicate beauty—have been despoiled; the many peoples of China have been downtrodden for centuries under their own warlords, while the latter were compelled, out of disunity and avarice, to enter into degrading alliances with the outside world. At one time in the 19th Century China became for the young United States of America a similar field for missionary activity and trade as India was for the British. However,

America not being a colonising power, there were no soldiers or administrators to enforce the 'benefits' of faith and civilisation, with the result that American influence never took root and ultimately was ejected.

In strict accordance with Marxist theory, China's plight and degradation led to the rise in that country of Communism. It was a hard, 30-year struggle, but the Chinese Communists came out triumphant when Chiang Kai-shek was forced to flee to Taiwan (Formosa). With Chiang Kai-shek's flight, although still backed by the United States, the influence of the West in China ceased. Taiwan and the United States Seventh Fleet are much more than a thorn in the side of the People's Republic of China: they are a dagger thrust at China. The new China has, so far, been refused admittance to the United Nations Organisation—a kind of ostracism in Ostrich Farm!

RIDDLE AND ANSWER

Until the present border dispute arose, India was something of a champion of China's case for admission to the world's councils. There is a long history of friendship and political contact between the old guard of the Congress Party and earlier Chinese national leaders like Sun Yat Sen. There existed in India—not out of Government policy or Chinese propaganda—a tremendous popular goodwill among the common people towards the people of China. It was spontaneous. China also has her longstanding, irreconcilable differences with the U.S.S.R.¹

But Peking chose to forfeit totally all Indian sympathy and amity for a few thousand square miles of barren, inhospitable mountain, creating sharp political tension and major military movements towards the frontier. The Chinese action is puzzling until the pieces are put together and the answer to the riddle is seen in the theory and practice of Marxist Communism in its Chinese pattern.

The creed of Communism—the doctrines of Karl Marx and Frederic Engels—was first established in Russia through bloody Revolution, bitter civil war and, concurrently, a war against the combined expeditionary forces of veteran soldiers sent by several Western, capitalist countries.² Thereafter Lenin, and after him Stalin, resorted to a system of rule that rivals the Athenian Oligarchy in its disregard for human dignity and human life. One outcome of this early Communist experience has manifested itself in all the Communist States set up thereafter: a morbid suspicion and distrust of all outsiders and, incidentally, of one another. Communist China is no exception.

Let us see how the Chinese occupation of Tibet is dovetailed neatly into Communist theories. We may start by accepting that the swallowing up of feudal Tibet is, without doubt, regarded within China proper as correct political and military action. The occupation of Tibet served to impress upon the Chinese people the strength of their armies and enhance the popularity of the Government, and took the people's minds off the Chinese Armed Forces' present inability to assault Taiwan. Taiwan is not merely the last refuge of Chiang Kai-shek: it is a burning issue of 'face' and political security. However, at the same time, the Chinese annexation and subsequent administration of Tibet is far from being popular in Tibet.³

1. See Journal of the Royal United Service Institution, February, 1960

2. See Moorehead, *The Russian Revolution*, 1958. This is probably the most succinct, readable account available of the confused events leading to the seizure of power by the Russian Communists.

3. See Moraes, *Revolt in Tibet*, 1960

AIM IN TIBET

In Tibet, the problem of the Chinese and Tibetan Commissars is to make the new Chinese-controlled administration there popular. This has not been made easier by the flight to India of the Dalai Lama whose exile has provided moral strength to the Tibetan resistance movement. Physical resistance to the Chinese in the form of guerrilla operations has also been organised.

In typical fashion, India has been branded as the malefactor, although she declined to sponsor the Dalai Lama's case at the United Nations, as thereby the Chinese hope to appear as the champion of Tibetan rights. Amongst the Panchen Lama's supporters there has always been the contention that the now disputed border areas of Ladakh, the NEFA and elsewhere were 'Tibetan'. These views are based on the forced levy of certain religious tithes and tribute by monasteries in Tibet. They ignore that this very situation rather implies subjection than territorial affinity or identification. These areas of dispute were held out as promised lands to be gained through the might of China—a very thin coating of unsweetened icing sugar spread over a large pill!

Chinese encroachment, then, is due to: diversion of the minds of both the Chinese people away from the Taiwan stalemate and of the Tibetan people from their subjection and loss of independence as the immediate, short-term aim. With this realisation, we may go on to piece together the remaining parts of the puzzle which fit together readily enough once the pattern has been realised.

China, at the present time, has no intention of waging war on India. Apart from serious internal difficulties, war would make China even more dependent on her big Russian 'brother', a fact that the Chinese became acutely aware of following their adventure across the Yalu. Most important, neither the Chinese people nor the Chinese economy is ready for the strain of a major war, although we should not underestimate China's military strength and potential.¹

Quite apart from policies of expediency, the waging of war in the Clausewitz tradition is not in the Chinese book. Nor can the Chinese way of waging war today be met satisfactorily by the pattern of Western organisations and tactics with which we are familiar and on which we would tend to pin our faith and strategy unless we reorient our ideas to suit the terrain and antagonist. It is claimed that the Chinese are the originators of guerrilla or irregular warfare.² This form of warfare has been the mainspring of all their strategy and tactics in combating the Japanese and seizing power in their own country. No less a person than Mao Tse-tung dictates that all military action must be undertaken with partisan auxiliary support.³ This was the pattern followed in Tibet, and this is the pattern that will be followed in any hot or cold war that may be waged in future.⁴

1. See *The Listener* of 24th March, 1960. "Nuclear weapons: China does not make them herself... Japanese intelligence agencies (say) there is a stockpile of nuclear weapons in China under close Russian control.....The Chinese Army.....present strength (is) 2,500,000 in 160 divisions.....15,000,000 in reserve.....200,000,000 in the militia.....3,000 aircraft.....weak in bomber units.
2. See Dixon, *Communist Guerrilla Warfare*, 1954 (But not Fleming who, as reported in his *Invasion*, 1940, invented a Chinese General who swayed the War Office—a tempting deception at the present time!)
3. See his own pamphlet on the subject published in 1937.
4. See Edgar Snow, *Red Star over China*, Random House Incorporated, 1938; Harrison Forman, *Report from Red China*, 1945, Irwin R Blacker, *Irregulars, Guerrillas, Partisans*, Simon and Schuster, 1954.

This is the challenge we have to face all along the border. It is a challenge that cannot be met either by large-scale deployment of regular military forces or simple extension of the pattern of administration existing in settled districts. The answer lies in the extension to all border areas of the pattern of administration so well developed in NEFA by the Indian Frontier Administrative Service (IFAS), but this service should have built into it and equally integrated with the military command a force of guides and scouts similar in many respects to Varma's Naga Guards raised in 1958 but with the concepts of Sir Henry Lawrence, Lt.-Gen. Sir Harry Lumsden, of Guides fame as the model at the political level.⁵ These and other measures are examined in the following pages.

CONDITIONS OF OPERATION IN THE HIMALAYAS

The self-evident, dominating geographical feature of the northern border of India is the mountain barrier of the Himalayas, the highest chain of mountains in the world. The wider implications of the Himalayas on the conditions of operation are only just beginning to be realized; previous experience was limited to the Younghusband Expedition, which was withdrawn, and the research of mountaineering expeditions to Everest and other peaks. Study of deployment of large military forces in the area is in its infancy; to a very limited extent only do the operations in Alaska, Greenland, Finland and Russia provide us with useful background knowledge, since their problems related to very low temperatures in terrain with sufficient flat portions at low elevations and often predictable weather conditions. We have to cope with cold plus extreme elevations plus mountains plus sudden changes in the weather.

I have referred to the Himalayas as a 'mountain barrier'. A few years ago one might have risked describing it as 'impenetrable', but today this word has been struck out of the military dictionary and even the Himalayas merit no stronger description than a formidable though not insurmountable natural obstacle. There are several ancient caravan routes and a few motor roads on the northern side of the border, with tracks going south to very high mountain passes close to the border. These tracks extend through the passes into our territory and eventually down to the foothills. They were used by the border-dwelling peoples of both sides as combined routes for trade and a rudimentary form of transhumance-type animal husbandry such as the Swiss practise in the Alps. The gradient is far more steep and much more difficult to ascend from our side, with the vital inference that, while no one might decide to winter it out at the mountain passes themselves, the northern side is far closer to the border in terms of both time and space. This is an incontrovertible fact of geography. It must therefore be accepted as one of the terms of reference when studying the conditions of operation in the Himalayas.

EVIDENCE OF HISTORY

The inherent difficulties imposed on military forces operating in the Himalayas are confirmed in the history of the area; the frozen skeletons of Rupkhund; the high casualties and inconclusive results of the many Adi (or Abor) expeditions in the North-East Frontier Agency (NEFA) in 1858, 1859, 1893, 1911-12; the march of Sir Francis Younghusband on Lhasa (1904); the independence and treaties of small buffer states like Bhutan and Sikkim as well as of Nepal and the special case of Tibet. All these examples testify

5. See *Lumsden of the Guides* published by John Murray, 1899.

to the remoteness and inaccessibility of the area. Notwithstanding military history, under present-day conditions it has become essential to man this extensive mountain borderline.

All along the border and its hinterlands population is sparse and nomadic due to the extremes of altitude and climate, especially in winter. For the same reason, the region is extremely backward in its economy. Lack of revenue made the region unattractive to even Imperial rulers: Younghusband's single-handed annexation of Tibet in 1904 was promptly disowned by the British Parliament despite the classical bogey of Czarist Russia's political penetration into Tibet. The strategy of the Imperial General Staff was to maintain inviolate this extensive cordon sanitaire of mountain, ice and jungle with its convenient buffer states of Tibet, Nepal, Bhutan and Sikkim. The long border was never held by military forces and this position was the main tenet of Macmahon's treaty of 1914. "Thereafter the region became the preserve of the less ambitious 'politicals', the more ambitious ones having been attracted to the turbulent North-West Frontier or the larger princely States. Many highly intelligent, gifted British Political Officers spent their entire service amongst the tribal inhabitants of the area now known to us as NEFA, while others were Agents in Tibet, Nepal, Bhutan and Sikkim. The aim of all these Political Officers and Political Agents was to maintain the splendid isolation of this border tract and its peoples—**isolated equally from the North and from the plains people of India to the South.** This was the stated policy, and it was pursued with total success. It is evident from the rigid control exercised over all entry into the region and the many writings of the period—the more important of these are to be found in the Governor's Library in Shillong and they make fascinating reading. The military counterpart of the same policy is seen in the total exclusion of Indian officers from Gorkha Regiments prior to 1947; through some inconsistency or out of expediency. Indian medical officers did, however, serve with the Gorkha Rifles as regimental medical officers for short periods.

ANOMALOUS POSITION

When our officers assumed responsibility for these areas in 1947, it was soon realised that a highly anomalous position had arisen as the aftermath of Imperial policy. Encouraged for so long to remain in isolation, the simple tribal people of the Himalayan tracts were uncertain and suspicious in their dealings with the new officers who came with their talk of five-year plans, schools and the opening up of the areas. In some cases misunderstandings arose as was inevitable under the circumstances. Today, our aim in these areas is opposite to that of the British regime but, nevertheless, we can learn much from the records and examples left by generations of dedicated British Political Officers and Agents regarding the manner in which the confidence, trust, respect and lasting affection of the border people can be won and retained since there is the common denominator—so often stressed by Prime Minister Jawaharlal Nehru—of upholding and fortifying the many excellent, traditional ways of life, fine craftsmanship and customary respect of man for man that is common to hill people the world over and is all too often absent in the plains.

The reader—especially the military reader—might think excessive attention has been paid to the people in this article. I shall show conclusively that the correct understanding and handling of the local population is the key factor that can offset geography and every other difficulty that is encountered.

EXTENSIVE AND VARIED

The border terrain is far too extensive and varied to be surveyed as a whole. It differs from one extreme to the other and is isolated not only taken as a whole but within itself, so that very often the traveller along it would have to descend 10,000 ft. and 200 miles, travel another one or two hundred miles along the foothills and then reascend to reach the border again. For convenience, the border is considered here from West to East, from Ladakh to NEFA.

Kashmir's remote eastern province of Ladakh borders both Tibet and China proper. Ladakh has a mean general elevation of over 15,000 ft.; it is barren of vegetation and snowbound for most of the year; it has never been prospected to any great extent but is known to contain deposits of commercially valuable minerals. Ladakh lacks communications; not only Ladakh but Kashmir and Jammu lack any railway; fair weather roads are under construction. The Chinese were permitted to build unhindered a major motor highway across Ladakh. The circumstances were debated in the Lok Sabha and can be read in the official reports. As far as India is concerned, neither this part nor any other part of the border is vaguely defined or unsurveyed. The first map of Ladakh was prepared by that remarkable veterinary-surgeon-conductor turned traveller and surveyor-explorer, William Moorcroft. His map of 1822, as well as a later Ordnance Surveys map of 1874, shows the north-east salient of Ladakh—the part currently occupied by the Chinese—as part of India. This encroachment has serious implications in terms of military strategy: this area could be used as a forward concentration area, being as low in places as 14,000 ft. (i.e., the Karakorum Range), whereas the true border lies along the Keunlun Mountains with their lowest passes at just under 20,000 ft.

COMMUNICATIONS

The centre part of the border is also at a very high elevation; it includes some of the highest mountain peaks in the world. Its population is more than Ladakh's, though still extremely sparse, and it has more forest at lower elevations than Ladakh. It includes northernmost Punjab, Himachal, all the northern districts of Uttar Pradesh, Bihar and North Bengal. From the communication artery of the Gangetic plain several roads and railways branch off to the North, but they all terminate at the foothills or serve hill stations a few miles inside the hills. None of them was built for military movements, but many could be adapted to this purpose if extended for several hundreds of miles into the mountains at tremendous cost.

The remaining sector comprises the NEFA and Assam. The NEFA is administered by the Central Government and lies North and North-East of the Brahmaputra Valley. Assam, unlike Kashmir, is served by a railway; potentially it is a very rich state and contains several strategic commodities including oil, a refinery, bauxite, coal and other minerals. NEFA, like Ladakh, is not served by either railways or all-weather roads except in its plains sector. It is at a generally lower elevation than Ladakh: 14,000 ft. being the mean, with many places much lower, so that population, although scanty, is relatively more than in Ladakh and is less nomadic. Nevertheless, the area is extremely isolated. Assam is easily the most remote state of the Union. It was not annexed to the British Crown until 1833 (some authorities mention 1838) and had suffered several marauding raids from Burmese tribes.

But for the tea industry, it is doubtful whether upper, or north, Assam would have been opened up at all. Although railways were built and despite

the tea and oil industries there is still neither a road nor a rail bridge across the Brahmaputra; at present these are under construction near Gauhati and will be completed shortly. Assam's road and rail communications were developed during World War II by the United States Army Engineers mainly to facilitate communication with China, but the partition of India in 1947 cut across the road and rail complex running from both Calcutta and Chittagong and the Assam Rail Link was not completed until 1949; this is still subject to delay during the monsoon, while most of Assam's tea finds its way to world markets either by river steamer through East Pakistan or by air over East Pakistan

WELL-DEFINED BORDER

It is a remote and farflung border; one of the longest land frontiers of the world. Despite its length and remoteness, the border is defined and is far more than being traditional or customary. On the contrary, it has been determined by maps and treaties. The competence and integrity of the many Ordnance Surveys carried out along the border had never been impugned. Nor should they be at this late stage: they were made from scientific and never political motives and the best evidence of their integrity are the records of the Surveyor-General of India and the many awards of the Royal Society made to survey officers for their hazardous journeys to survey these remote areas.

The description of the conditions of operation that I have given is extremely cursory and is intended to serve as a general introduction for readers studying the Himalayan region. Readers are recommended to keep at hand a good atlas and gazetteer, the border area map published by the Ministry of External Affairs and handbooks, especially those published under the auspices of the then Province of Assam. Many of the latter are out of print, which is a great pity since their excellence is in no way marred by the changed political conditions. This basic source material should be studied with particular reference to: physical geography; political units; communications; population density; ethnological, linguistic and community distinctions. The following should be noted in greater detail: main physical features, especially mountains, rivers and valleys: general elevation; heights of passes; temperature and snowfall in relation to seasons; the tree line; the summer and winter 'population line'; the nature and depth of the hinterland on either side of the border; the gradient on either side of the border where there are passes; the distances from the border to the main arteries of communication with the Gangetic and Brahmaputra valleys compared with the distance from places like Lhasa which has an all-weather road and is soon to have a railway; the absence of communications—not only railways and telegraph lines but also roads and sites for even short airfields. The political importance of the buffer states of Nepal, Bhutan and Sikkim is important. Tibet once completed this vast buffer—today that part of the buffer has been converted into a spring-board. The physical acclimatisation necessary for operating at high elevations can be read from any good book on the conquest of Everest and other mountaineering expeditions: the time required for acclimatisation should be particularly noted.

PROSPECTS OF A THERMONUCLEAR WAR

By Flight Lieutenant K. S. TRIPATHI

IT is believed that the fear of total destruction has ruled out the possibility of a thermonuclear war, for there would be neither victor nor vanquished, neither belligerents nor neutrals. The frightening question is whether civilisation will avoid disastrous dissolution from uncontrollable struggles for political power or economic superiority and whether the human species can avoid at least partial extinction by misapplication of its own ingenuity.

Many idealists, thinkers and religious leaders have raised their voice against the dangers of a thermonuclear war. Lord Bertrand Russell, the high-minded apostle of unilateral disarmament, has been vigorously agitating, despite his advancing age, for a complete ban on nuclear weapons by the United Kingdom. He would rather willingly accept communism than see the destruction of mankind. The Vice-President of the Soviet Academy of Sciences, Mr. A. V. Topchiev, said in a television programme recently that war was no longer possible. Speaking at a conference of scientists, Mr. Topchiev declared that any conflict would be a nuclear war and would result in the destruction of all mankind.

FAILURE OF DISARMAMENT TALKS

Notwithstanding the grave consequences of a thermonuclear war, the disarmament talks have yielded nothing except increasing acrimony and discord. Paradoxically, the political leaders of the world have been desperately augmenting their thermonuclear power while talking of peace and disarmament. "We have been reluctantly forced", says Bertrand Russell, "to the conclusion that the West at least has not been sincere about disarmament and has made only such offers as it was confident that the East would reject. Once in 1955, the insincerity of the West was dramatically exposed: the West made some excellent proposals towards disarmament, but to the horror of the Western Powers, the Soviet Government accepted these proposals, whereupon the West at once withdrew them." Likewise, many in the West believe that there is nothing more than propaganda in the Russian offers for disarmament.

Although the ideological irreconcilability of the two systems is so pronounced that it looks as if they can co-exist only in a state of perennial tension, it is interesting to note that the desire for peaceful co-existence is a genuine urge of many Soviet Army officials. Writing in an article, "The Character of Modern War" (reproduced in "Survival" Jan.-Feb., 1961), Maj.-Gen. Tolenski said, "War in the military-technical sense has outlived itself as a weapon of policy." The General concludes: "We must struggle even more stubbornly and consistently for the destruction of all armaments, for the exclusion of war from the life of human society, for peace in the whole world."

There is little doubt that in the West, too, people are genuinely wedded to the cause of peace. But while the desire for peace is strong, equally strong is the desire to match the technological advancement in the opposite camp, and since these advances are almost wholly in the field of military science, the rivalry naturally tends to become bellicose. The resulting tension has proved the rock on which disarmament talks have floundered. It is clear that no negotiation will succeed unless there is sincerity.

FALLACY OF DETERRENCE

Great reliance has been placed on what is now popularly known as thermonuclear deterrence. The theory of deterrence seeks to establish that the enemy would be deterred from launching an attack if spectacular evidence is provided for an immediate massive retaliation. The conception of deterrence originated in 1907, when Sir Eyre Crowe, Assistant Under-Secretary at the British Foreign Office, presented his famous memorandum. The rate of German naval construction constituted a grave threat to England. Sir Crowe argued that this threat would be withdrawn only if the Germans were convinced that Britain had the will to meet and vanquish it. And the only way to convince them was to provide, as he put it, 'ocular evidence' of this will, by building battleships at twice the German rate. The phrase 'ocular evidence' is significant, as it sums up the whole of the deterrent philosophy. Sir Crowe was the forerunner of John Foster Dulles, and therefore the first pioneer of the theory of 'massive retaliation'. Not only was the navy fully mobilised in anticipation of war, but the army was also geared up to the task of contributing a deterrence.

The programme to attain sufficient deterrent power was due to be completed in 1914 and, paradoxically, the same year was picked up by the military experts on both sides as the most likely year for a conflict. They foresaw that the period of maximum danger would coincide precisely with the moment when the deterrent became complete. Far from preventing war, deterrence precipitated it, and although it did to some extent help in winning the conflict eventually, it did not deter the Germans. Rather it provoked them to throw the gauntlet of war.

THE DULLES THEORY

In January, 1954, U.S. Secretary of State Dulles issued his famous warning that the United States would meet Communist aggression with "massive retaliation—at a time and place of our own choosing." Mr. Dulles was in fact enunciating a new strategic theory. He sought to clarify that rather than fight any more limited wars on the Korean pattern, the U.S. would unleash the strategic air command, if sufficiently provoked to do so. This theory has remained the alleged basis of American World Strategy though considerable flexibility has been introduced in this rigid doctrine since the Kennedy administration took over.

The philosophy of deterrence has invited caustic criticism from various quarters as a dogmatic and deterministic attitude based on ideological obscurantism. It means that mere bulk and destructive power of nuclear weapons is enough to deter the enemy from aggressive designs. If, therefore, war breaks out, notwithstanding the stockpile of nuclear weapons, the doctrine of deterrence would have failed, and the strategy based on it would have collapsed. And if war breaks out and nuclear weapons are used, not only will the belligerents be destroyed but the entire human race may be wiped out. There is little doubt that an all-out nuclear war is likely to inflict major suffering on the population of European countries, USSR and USA, and also on the peoples of the rest of the world.

SEARCH FOR ULTIMATE WEAPONS

Mounting tension and increasing suspicion have given an impetus to an incessant drive for monster bombs, accompanied by a bizarre demonstration of power. The "U.S. and World Report" magazine recently claimed that the United States has the equivalent of 35,000 million tons of TNT. The military

power of the U.S. was "too strong, in too many places" for the Soviet Union to win a nuclear war "and they know it," the magazine claimed. "Press a button today and more than 200 missiles with hydrogen warheads would go speeding to specific cities in Russia. An additional 500 smaller missiles would be fired on other targets. From near and far, more than 5000 U.S. bombers could be sent into action." The magazine further said that in the first 24 hours of an "all-out war, the U.S. could pull the trigger on the equivalent of 16,000 million tons of TNT—4,000 times the total dropped in World War II. If "most of the first wave" of a U.S. attack struck home, 80 to 90 per cent of the Soviet Union's 200 million people would have been killed.

Till 1958, when the moratorium on nuclear tests was announced, a total of around 260 detonations had taken place—170 by the U.S.A., 70 by Russia and 20 by Britain. After that France exploded four, and the Soviet Union carried out some time back a series of nuclear tests of high yield power. These tests were followed by ominous announcements by Mr. Khrushchev that the Soviet Union would test 100-megaton bombs. In mid-1961 the USSR carried out military exercises in the Pacific Ocean, testing multi-stage rockets fitted with nuclear warheads and capable of hitting targets thousands of miles away with astonishing accuracy.

In April, 1962, the United States started a new series of nuclear tests over the Pacific Ocean. Earlier, in March, President Kennedy, speaking in a nationwide television broadcast, had outlined three different types of tests for the new series. The first were proof tests of existing weapons, the second and "the most important" were called "effects tests" determining what effect an enemy's nuclear explosions would have upon U.S. ability to survive and retaliate.

The third type were tests in the atmosphere to permit the development of more advanced contents and more effective, efficient weapons which, in the light of Soviet tests, were deemed essential to the nation's security. The President further said that while U.S. technology in smaller weapons was unmatched," we know how the Soviets have made major gains in developing larger weapons of low-weight high explosive content of 1 to 5 megatons and upwards.

Mr. Khrushchev has already announced that the Soviet Union would soon start her own testing of nuclear weapons in answer to the American tests. There appears to be no end to tests and counter-tests.

Nuclear experts both in the United States and the Soviet Union are busy manufacturing bombs of higher yield, more deadly and more dependable. They are looking out for a number of specific achievements. One is to develop a "clean" bomb, that is, one without fallout, without radioactive dust or Strontium 90. Such a bomb would be specially desirable in a battlefield, ensuring for it immunity from contamination and giving combatants greater freedom of action.

The second is the famous neutron bomb—a bomb exploded by some means other than the "dirty" fission process. It will yield little blast or heat and thus will not destroy property; but it will kill men with its teeming swarms of neutrons. Many consider that this will be an ideal weapon for conflicts in small areas; others are of the view that a weapon which can only kill men but not demolish men's arsenals does not solve the real problem.

Further tests will perhaps lead to more destructive weapons and, although a point of no return has been reached, the nations of the world appear to be swept off in a whirlwind of hatred, jealousy and rivalry.

THE INTERNATIONAL SCENE

The international situation presents a dismal picture. Added to the ideological wrangles are the economic and political vested interests which make the confusion worse confounded. At many places spheres of interest and influence overlap creating highly tense and explosive situations. And since the interests are diametrically opposed to each other, there is no meeting ground. Negotiations do temporarily conceal burning embers, but the possibility of a conflagration cannot always be ruled out, for no compromise can fully meet the interests of violently opposed groups of nations.

Berlin, the legacy of the Second World War, presents a knotty situation. The Soviet Premier's proposal for a peace treaty with East Germany is regarded by the Western Powers unworkable, as they fear it would result in liquidation of the Allied position in West Berlin. The Soviet leader, on the other hand, has declared in unequivocal terms that the USSR would go ahead if the Western Powers refused to co-operate. Even though an agreement may eventually be worked out, the peculiarities of the situation will contain enough combustible material to spark off a conflagration at any future date, if sufficient care is not taken.

NOT AN IMPOSSIBILITY

It is interesting to note that as early as 1896, when the weapons of war were still primitive and when there were no aircraft, and no giant bombs, Jean de Bloch wrote: "I maintain that war has become impossible, alike from a military, economic and political point of view. The very development that has taken place in the mechanism of war has rendered war an impracticable operation. The dimensions of modern armaments and the organization of society have rendered its prosecution an economic impossibility."

Since Bloch wrote these words, two World Wars and many smaller wars have been fought, and today, with weapons far more dangerous than in those days, preparations for the third World War are afoot.

The threat of being attacked in return, in the event of nuclear aggression, has been so far the most reliable insurance against the outbreak of total war. The fear of total destruction deterred powerful nations from resorting to a nuclear war, but the pattern of war is now changing. The problem of nuclear war is being subjected to greater scrutiny and analysis, and many new postures have now been brought to light. Oskar Morgentern, a politically orthodox American defence expert, believes that a nuclear war is more likely to occur than not. Although the storm appears at times to have passed off, it is interesting to recall how in moments of stress leaders of the world talk of nuclear war. In his statements over Berlin, Premier Khrushchev threatened to unleash a nuclear war. He appeared to have calculated all risks, for he pointed out that, though the damage to Soviet territory would be extensive, the country would not be totally destroyed because of its big size. He, however, gravely warned that smaller nations like the United Kingdom, Italy, France and Germany would be wiped out in the event of such a war.

Dr. Garthoff, whose brilliant study "Soviet Strategy in the Nuclear Age" has considerably influenced recent military thinking, bases his study on the hypothesis that a nuclear war is likely to occur. He believes that, after the first round of the nuclear conflict, a state of nuclear-stalemate would emerge, which would require vast conventional forces to win the war. The USSR, while building up her nuclear forces, did not neglect conventional arms, whereas the Western Powers, temporarily blinded by the glamour of all-

devastating nuclear weapons, paid scant attention to their conventional forces. This has resulted in upsetting the balance of power.

HOPE FOR SURVIVAL

Herman Kahn, who recently conducted his study on thermonuclear war at the Rand Corporation, and later published his monumental work, seeks to put forward the possibilities of a nuclear war, and allay unfounded fears regarding its dangerous potentialities. He believes that a thermonuclear war is a plausible posture. Let nobody deceive himself that a thermonuclear war would not take place, whatever be the provocations. Those who rule out the possibility of such a war base their arguments on the assumption that a nuclear war would spell universal and total destruction. Herman Kahn has tried to prove laboriously, though not entirely convincingly, that a thermonuclear war may be an unprecedented catastrophe but by no means a total one. Large numbers of people would survive a nuclear war and the survivors will not envy the dead. Conditions after such a war would not be intolerable, though it may be exceedingly difficult.

Kahn believes that the economics of the people would recuperate within 10 years and people would again be in a position to wage another nuclear war. Although one may not readily see eye to eye with Kahn's views, one can hardly help being lifted from the morass of despondence. There is still hope for survival, a thermonuclear war notwithstanding.

While injecting a ray of hope into the bleak picture, Herman Kahn has rudely shaken military strategists who have been living in a fool's paradise. The possibilities of the outbreak of a thermonuclear war have started looming large.

Although Fred Charles Ikle, discussing the possibility of survival in his book, "The Soviet Impact of Bomb Destruction", believes that the Big Powers "which fought for these issues would have disappeared from history—much as the Inca Empire and the realm of Carthage have ended for ever," yet the smaller nations would still survive and represent the two main systems of Government, viz., capitalism and communism. John M. Fowler has also painted a rather cheery picture of nuclear war. He believes that a skilled and resourceful individual or family outside the ring of complete destruction and on the outskirts of the lethal umbrella of fallout might survive the nightmarish early weeks. By burrowing into the basement or huddling under some hastily improvised shield in a corner, a person might survive.

A nuclear war would undoubtedly bring unparalleled misery, but it would not result in total annihilation, though the extent of damage would depend on the scale of war. An all-out nuclear war would result in widespread devastation, the like of which has never been seen before, but still people would survive. It would be unwise to place undue reliance on the theory of deterrence and to believe that the fear of total destruction would prevent a crafty aggressor from resorting to nuclear war. The only way to prevent nuclear war is genuine disarmament scrupulously and honestly accepted and carried out by all people and since it is an illusive proposition, a nuclear war may indeed occur. "The unleashed power of the atom has changed everything," said Einstein, "save our modes of thinking, and thus we drift towards unparalleled catastrophe."

FUTURE REQUIREMENT OF AIR OP

By Lieut-Colonel E. K. HARI KRISHNA

AIR OP units are Air Force units, whose flying training is directed by the Air Force. Air OP flying, apart from the general flying of a light aircraft, consists of highly specialised flying technique of light aircraft aimed at implementing air OP tasks in operations.

Air Op units are employed in intimate support of army formations and army units, particularly artillery formations and artillery units. To carry out its task, Air OP requires specialised Air Op flying tactics, employment techniques and deployment drill both on the ground and in the air. Such flying tactics, techniques and deployment drill are peculiar to Air OP. It is practised in no other army or air force unit in India.

To carry out the specialised Air OP task, a specialised light aircraft is required. That such a requirement exists can best be judged by the evolution of the current Air OP aircraft, the Auster MK IX of 180 h.p., which was developed out of a civilian American aircraft, the Taylorcraft of 55 h.p. In the UK, one branch of this development has produced the MK IX for Air OP duties, while the other branch has developed into purely civilian versions of various types of Austers.

FLYING TECHNIQUES

Since the inception of Air OP in India from 1947, Air OP flying techniques and training have tended towards air force type of flying as opposed to specialised Air OP type of flying. During the development of the Air OP in the UK, this tendency was curbed at the very outset by the pioneers who conceived the idea of Air OP. In India, on the other hand, any attempt to specify the flying techniques towards a purely Air OP requirement did not meet with much success as the Air Force did not fully appreciate or accept the Air OP requirement. The Army at the same time did not quite understand the problems and never pressed their case sufficiently. It need hardly be stressed that the flying techniques between the Air Force and the Air OP, except for the general flying exercises, are widely divergent. Some of the reasons for the present tendency towards an air force type of flying in the Air OP are as follows:—

- (a) The Indian Air Force, who are completely taken up with the flying techniques of high performance aircraft, are responsible for formulating the Air OP flying training. Flying techniques for a light, simple aircraft of the Air OP have therefore been completely neglected. Its requirements are neither fully understood nor fully accepted by them.
- (b) Air OP flying techniques followed at present are those known to India up to 1943 when we had liaison with the Air OP Training School in the UK. Since then there has been no liaison with the UK school. In the meantime, nothing original came out from the Air OP units in India. Air OP flying techniques, on the other hand, have been modified in the UK where a Trials Wing was established to carry out experiments in light aircraft flying techniques and requirements of the Air OP. This has not happened in India. There is no possibility of accepting this requirement in the near future either.
- (c) In almost all foreign countries, including the UK, Air OP duties have been entirely taken over by the army. Therefore, the necessity for

the specialised light aircraft flying techniques for the army have been fully recognised, developed and accepted in those countries. This has not happened in India where we are entirely dependent on the Air Force who are not fully conversant with the Air OP operational requirements.

AIR OP TACTICS

Air OP Units have been employed in operations and in peace-time exercises in India since 1946. In operations it was employed in the Hyderabad police action where it was extremely well employed in intimate support of army formations in almost classic Air OP tactics.

Air OP was also successfully employed in the Kashmir operations. In this theatre, however, due to the terrain, static nature of the operations from an Air OP point of view and various other limitations, the Air OP was mainly employed in communication duties. It was also employed for reconnaissance, casualty clearance and to a smaller extent in directing artillery fire. The Air OP in this theatre was employed from static, well-prepared ALGs. Therefore, the necessity for the movement and deployment of the Air OP units as such never arose.

In peace-time, Air OP units are being employed in formation and unit exercises regularly. However, except for a few occasions, their employment has been inadequate in that they have been employed as Air OP section or sections and not as flight, the basic operational unit. On the few occasions they have been employed as flight, their tactical handling was given secondary consideration.

Under the above conditions the tactical handling of the Air OP units have been sadly neglected. Over and above this no exercises have so far been held at which pure Air OP tactical employment has been studied. This speaks for the sad neglect of the Air OP by the army. An ideal place in the present set-up to carry out such studies would have been the Tactical Wing, School of Artillery.

This, however, has not been the case in the UK where exercises in the tactical handling of Air OP is regularly tried out. Moreover, there is a Tactics Wing at the Army Air Corps (AAC) Centre, the light aircraft Flying School of the UK, where the tactical handling of Air OP is a subject for special study. A team from this Wing also carries out routine checks of AAC units to standardise the tactical training of these units during their practice camps.

AIR OP AIRCRAFT

The present Air OP aircraft is the Auster MK IX of 180 h.p. The present mark is perhaps the final development of this particular line of fixed wing light aircraft for the British Army. The current trend in the UK is completely to do away with fixed wing aircraft and to concentrate on a universal helicopter for the Army. When the choice is finally made it might well be the Saunders Roe helicopter P-531.

Auster MK IX available in India are running out and it is certain that no more of these will be bought from the UK. Development of an indigenous aircraft is progressing satisfactorily. The indigenous model so far available is essentially a civilian aircraft. Its acceptance with suitable modifications for Air OP requirement would go a long way towards finding an indigenous aircraft

for the Air OP. The success of this would, however, depend entirely on whether the provisioning authorities fully recognise that an Air OP aircraft is as much a specialised aircraft as any other type of aircraft in service for specialised duties.

AIR OP FLYING TECHNIQUES

The emphasis in the Air Force being on high performance aircraft, no appreciable weightage has been given to the flying techniques required of the Air OP who are required to fly at low speeds, at low heights, operating from unprepared confined ALGs and with maintenance coverage of a limited nature. The specialised nature of Air OP flying techniques and its requirements may be summarised as follows:

- (a) Air OP is required to carry out extremely low-level flying for operational reasons which during operations and advanced training may be taken right down to ground level. This calls for exceptional skill, alertness and accurate flying. No air force unit other than the Air OP carries out such a type of flying.
- (b) Air OP is required to land an aircraft at a speed dangerously near the stalling speed, to enable it to operate from limited ALG, confined space, unprepared ALG and over obstacles on its landing approach path. This again calls for specialised techniques. This requirement may sound far-fetched to one not well versed in Air OP requirement. It is, however, most essential, requiring a specialised technique coupled with a specialised aircraft.
- (c) Air OP is required to employ specialised techniques to take off from unprepared or very nearly unprepared ALG. Such conditions will invariably be met with in operations. Moreover, the time for preparation and manpower available may impose further restrictions on ALG. It may have to be a restricted ALG, with its width restricted to a size comfortable enough for the track width of the aircraft, its length sufficient enough to get the aircraft airborne in the minimum distance of the aircraft's capability and with obstacle in the take off path calling for the use of the maximum climbing rate of the aircraft. This again calls for specialised technique and specialised aircraft.
- (d) Air OP is required to employ specialised technique for landing over fairly high obstacle, when situation so warrants, of up to 30-50 feet.
- (e) Air OP is required to employ specialised techniques for landing and take off from marginal field with or without cross-wind blowing across the ALG.

It will be obvious from the above that Air OP requires specialised flying techniques, if it is to function efficiently in its operational role. It is, therefore, essential firstly to accept the need for such type of flying and secondly to assess scientifically the flying techniques required for the same. If this is not understood by those responsible for Air OP, its operational flying training is bound to suffer, even though the general flying training may be of the required standard.

To remedy the above situation the following suggestions are made:—

- (a) Air OP units should be made to forward their recommendations on any specialised flying techniques evolved by them to a central authority for assessment. Such authorities must be fully briefed on

Air OP's operational requirements. New techniques would obviously depend on the type of aircraft used by the Air OP.

- (b) The Air Force Training College should be made responsible for maintaining a Trials Wing on light aircraft flying techniques. The pilots should be not only well versed in the flying techniques of light aircraft but possess a sound basic knowledge on the tactical flying requirement of the Air OP. The officer-in-charge might well be an Air Force test pilot with sufficient hours on light aircraft, with a team including of at least one selected Air OP QFI (army officer) to brief the team from the Air OP angle. It cannot be over-emphasized that a well-qualified Air OP pilot should be in close association with the Trials Wing for light aircraft. If the Air Force is unable to accept this, this commitment should be taken over by the Army at the Air OP Training Establishment.
- (c) Future light aircraft manufacturers in India should be fully briefed on the flying and operational requirement of the Air OP if their aircraft is likely to be considered for Air OP duties. Without this any aircraft selected may not be capable of the performance required for Air OP flying techniques.

TRAINING

The tactics to be employed by the Air OP are at present contained in the Artillery Training Vol II pamphlet 4/1956. Little is at present understood about Air OP tactics other than in Air OP units. As far as is known, it is neither discussed nor practised in the Tactical Wing, School of Artillery or any other training establishment including Staff College and Infantry School. What little is taught of the Air OP consists in describing its organisation, allotment to formations and describing its capabilities in very general terms.

On the other hand, such training establishment could well emphasize what a commander could derive out of a versatile unit like the Air OP and how well he could employ it to achieve the maximum benefit. Discussion should be based on how best to employ the Air OP in each operation of war.

Very little is done at present to study, improve and modify the Air OP tactics given out in the appropriate artillery pamphlet. The syllabus at the Tactical Wing, School of Artillery, for an Air OP student under training does not fully cover the study of Air OP tactics. The reasons for this are as follows:—

- (a) There is little tactical thinking done on Air OP at the Tactical Wing, School of Artillery.
- (b) The QFI available to the Tactical Wing, School of Artillery, is a flying instructor whose capabilities do not normally extend to the discussion of Air OP tactics.

To remedy the above situation the following suggestions are made:—

- (a) Tactical employment of Air OP unit be given sufficient weightage at appropriate School of Instructions. The syllabus and brief for such instructions should be initiated from Tactical Wing, School of Artillery.
- (b) More weightage at Tactical Wing, School of Artillery, for a study of the tactical employment of Air OP in each operation of war.

- (c) One instructor at the Tactical Wing, School of Artillery, should be an ex-Air OP QFI or an ex-Air OP flight commander who is also Staff College qualified.
- (d) Such an Air OP officer instructing at the Tactical Wing, School of Artillery (non-existent at present), should be detailed to attend the practice camps of Air OP units to comment on the tactical handling aspect of the Air OP units.

AIR OP AIRCRAFT

We are in the process of provisioning a new aircraft indigenously produced. If this aircraft is to qualify to come up to the exacting standards required of the Air OP in operations, certain characteristics are to be borne in mind:

- (a) It should be a light and simple aircraft, with sufficient range and endurance to operate from an ALG in support of the army formation without the need for refuelling too often between sorties.
- (b) It should have ample power to clear obstacles and to manoeuvre when operating in difficult terrain in intimate support of army formations.
- (c) It must have adequate slow-flying characteristics with complete control at slow speeds.
- (d) It must be capable of landing safely near its stalling speeds which must be low.
- (e) It must have sturdy and easy-to-maintain under-carriage to operate from unprepared ALGs.
- (f) The aircraft itself must be easy to maintain from ALG with minimum maintenance crew and with minimum specialised equipment.
- (g) The aircraft must be docile, with short landing and take-off characteristics, sufficient stability in bumpy weather and capable of cross-wind landing and take-off.

Such requirements as given above, as well as other requirements of a technical nature, are the essential requirements of an Air OP aircraft. Such requirements can only be understood by one who has carried out Air OP flying under operational conditions in war or such simulated conditions in peace. It is, therefore, imperative that such a knowledgeable pilot, who of necessity must be an Air OP pilot, should be available for consultation and assessment of new type of aircraft before an indigenous product is finalised for Air OP duties.

Following are some suggestions in this regard:

- (a) The authorities concerned with the provisioning of the aircraft must be fully briefed on the operational role of the Air OP.
- (b) Such authorities must be made to realise the need for suitable specialised aircraft to carry out such operational role.
- (c) An Air OP QFI with sufficient experience or an ex-flight commander with sufficient experience should be intimately connected with the development and final selection of an Air OP aircraft.

BOYS TRAINING IN CORPS OF ENGINEERS

By Major D. N. MODAK, Engineers

INTRODUCTION

THE necessity or otherwise for training a percentage of recruits as boys before they undergo the normal recruit training has been posed to the Centre Commandants often. Specially in these days of expansion of the Defence Forces and the need for economy, wherever possible, this issue repeatedly comes up for consideration.

AIM

The aim of this article is to examine the usefulness of training a percentage of recruits as boys.

USEFULNESS OF BOYS TRAINING

It is emphasized that there are two main reasons for having boys trainees. The first is that we cannot expect to produce from normally enlisted recruits a sufficient number of that type of leader which modern warfare requires. This has also been amply proved by experience (see Appendix 'A'). The second is that a sufficiently high standard cannot be reached in the time available, by the normally enlisted man in a certain skilled work, and more so in the development of leadership qualities. In these days of rapid technical developments the necessity of some basic technical knowledge cannot be overemphasized.

MAIN AIM

The main aim of Boys Training is two-fold:

- (1) To develop the Junior Leader, a person who is physically, mentally and morally fit enough to impress on his fellowmen the urge to follow him in action or thought.
- (2) To produce incipient tradesman, a young man who is well grounded in the fundamentals of the trades which he will later adopt.

SUBSIDIARY AIMS

Apart from these two objects the following advantages are also derived by the boys trainees:

- (a) In them is always available a nucleus of well-disciplined men who could make good junior leaders with comparatively less service. This will be very essential in an emergency when a sudden expansion of the Corps will call for a large number of potential junior leaders for filling in the void that will be created by sudden promotions.
- (b) They also provide a broader base of men with higher and better Army educational qualifications. These men will be required in times of emergency for higher promotions, higher trades class and more technical tasks.
- (c) Promising athletes and sportsmen can be trained systematically from the very beginning of their army career and at a very early age in life.

* From The Journal of the Institute of Military Engineers, Sept. 1961.

- (d) A boy's unit affords opportunities to promising young sons of serving soldiers/ex-servicemen to join the Army at an early age, thereby becoming self-supporting and ceasing to be a burden on their parents.

This results in raising the morale of the men and also their efficiency apart from making available to the Corps young boys with the correct background.

JUNIOR LEADERS

The main aim of boys training is to produce the junior leader, a person who is physically, mentally and morally fit enough to impress on his fellowmen the urge to follow him in action and thought.

To be physically fit he must be well nourished, accustomed to clean living, be healthy in body and nerves, be capable of physical and mental endurance, and be courageous.

It will be amply clear from statistics of low medical category personnel (Appendix 'B') that the ex-boys have proved to be physically better suited to undergo the rigours of hard Army life. Specially these days when the recruitment is not necessarily restricted to any class or areas and when the percentage of recruits coming from urban areas, where the health of an average youth is not very satisfactory, is increasing, the necessity for boys trainees exists more than ever before.

To be mentally fit the junior leader must have a broad outlook and understanding; he must be free from prejudices; he must have an analytical mind which is capable of logical deductions and arriving at sound decisions; he must be keen and enthusiastic; he must have sympathy for and understanding of his fellow men; he must be open and frank.

To be morally fit he must be unselfish and be governed in all his thoughts and action by a high sense of honour, self-respect and loyalty to his unit, Service and mother country; he must know instinctively what is right and have the moral courage to act in accordance with that knowledge, even though it may appear unpopular or disadvantageous to himself; he must be self-confident and yet modest; he must have initiative and be prepared to take action.

It will be evident that these qualities cannot easily be developed in a normal recruit (who is older) as he is more mature and has too much rigidity in outlook to be appreciably affected by the appropriate military training. Moreover the short period of training which he undergoes in the Training Battalion is inadequate to develop these qualities.

It is true that the qualities of leadership even for a junior leader cannot be fully developed during his boys' training period, but considering the fact that during the course of a sapper's normal training in a field unit no special emphasis can be laid on training as a junior leader and that too for a longer duration, the training imparted in a boys' unit will go a long way to inculcate the leadership qualities.

In the past when the recruitment to the army was restricted only to the then called 'martial races', when the units were based and organised on class/caste system, it was very easy and natural too for any and every jawan of the unit to have sympathy for and understanding of all his fellow men.

These days the recruitment is open to every citizen of the country. One can find in a Bengal Sapper unit of today, men of many different classes, viz.,

Sikh and Punjabi Hindus, Purbia Rajputs, Purbia Brahmins, Garhwalis, Kumaonis, Dogras, Assamese and so on. They come from six different states: Punjab, U.P., Bengal, Bihar, Orissa and Assam.

It will definitely not be very easy for a normal entry recruit, with a comparatively mature mind and rigid ideas, to be entirely free from all prejudices and to have equal sympathy for all his colleagues and obviously one cannot expect to make good and efficient leaders from such a lot.

All this will only be possible by bringing the young boys into the fold of the Army at an early state in their life and by allowing them to live together for a longer period, to get to know each other better, not only as individuals but also as classes and provincials, and to be bound by the feeling, of unity and oneness. Hence now, more than at any other time, is the greater need of boys training.

That ex-boys prove to be better junior leaders as proved by figures in Appendix 'A'. In higher ranks, e.g., Havildar, Jemadar, where promotion becomes more and more selective, the percentage of ex-boys is more than that of the normal entry recruits. The higher percentage of ex-boys doing the Army courses is a direct indication of their better suitability both as tradesmen and as junior leaders (Appendix 'C').

INCIPIENT TRADESMAN

By the "incipient tradesman" is meant a young man who is well grounded in the fundamentals of the art, profession or trade which he is later to adopt. These days there is a great need for such incipient tradesmen whose grounding has been such that they are ready to undertake further specialist training so as to become fully proficient. The effect of this boys training as an incipient tradesman will be obvious from the study of the statistics of the trade group and the trade position by classes, of effective personnel (Appendix 'D'). A greater percentage of boys are in the higher group trades and in the higher classes of various trades.

Formerly it was easy to get bricklayers, masons, carpenters and similar tradesmen from rural areas who used to provide good material for selecting personnel for higher classes of trades at a later stage in service. This accounts for the slightly higher percentage of normal entry recruits in Class I of the trades as reflected in Appendix 'D'. But these days such technical personnel are seldom available to the Corps as recruits. Hence there is a greater need of this sort of boys training to convert them into incipient tradesmen.

Moreover in days to come, more and more technical equipment will be required to be handled by all types of tradesmen. It is evident that the trades practices are also gradually changing and becoming complicated. Day by day even 'Gharka Tradesmen' if at all available as recruits, will not be of the right type and hence it is in these days more than at any other time that we are feeling the paramount importance and dire necessity of boys trainees to bring them up as the future tradesmen/technicians.

NUCLEUS FOR EXPANSION

These are the days of expansion of the Corps. The extent of expansion in future cannot be forecast. These expansions lead to quicker promotions at all levels. It is not very difficult to fill in the vacancies at higher levels, as all the leaders can go at least one step up. Upto the Naiks, Havildars and Jemadars a part screening is already achieved and these men are earmarked as good junior leaders.

The difficulty is experienced in finding suitable Sappers and Lance Naiks to fill in the vacancies of Lance Naiks and Naiks, as it is at this level that selection is required to be made from personnel with comparatively less service. Not only that an average normal entry recruit will not have adequately developed the essential leadership qualities, but it is also difficult to select personnel for these lower ranks which are in fact the initial and major steps towards the future promotion, from sappers with such limited service.

It is, at such junctures that ex-boys who are trained to be efficient junior leaders are of utmost help; on account of their special training, comparatively more service and more experience of Army life, these ex-boys will always be found more suitable as junior leaders. As it is round the nucleus of these well-disciplined potential junior leaders that any expansion can be brought about with comparative ease, we now find the greater need of boys training. As regards the state of discipline of ex-boys vis-a-vis normal entry recruits the figures at Appendix 'E' show that the ex-boys are better disciplined and are therefore better suited to be junior leaders.

ARMY EDUCATIONAL QUALIFICATIONS

The most popular argument against continuing Boys Units is that now, as we are getting recruits having better civil education, the need of boys is no more there. No doubt the educational qualifications of an average recruit are better, but the standards, the medium of instruction, and the subjects taught, vary so much in various states that these civil educational qualifications are not very helpful for an average recruit to achieve higher promotion and higher trade class.

The recent changes in the syllabus of the various Army Education Examinations, specially in Hindi, have made it essential for every soldier to achieve comparatively higher standards in Hindi. This may not be possible for recruits coming from provinces like the Punjab and Assam where the medium of instruction is not Hindi. Thus even if the recruits in their own way have achieved higher civil educational standards, they are in many cases still not upto the mark as desired from Army educational standards.

To ensure that adequate numbers of personnel with the necessary Army educational qualifications are always available, it is essential that we enrol boys at an early age and impart to them proper education and training based on the requirements in the Army. The figures at Appendix 'F' show that the education position of ex-boys is much better than that of the normal entry recruits and as such a greater percentage of ex-boys will come up as junior leaders and higher class tradesmen.

ATHLETES AND SPORTSMEN

It is now abundantly clear that the 'Services' are the main source of national athletes and sportsmen. It is also an accepted fact that the selection of these sportsmen and athletes should be made from a greater number of personnel and also that they should undergo systematic training from the early stages. This aim of producing better athletes and sportsmen can be achieved by giving them systematic and regular training right from an early age. The results of such coaching have been extremely encouraging.

SONS OF EX-SERVICEMEN AND SERVING SOLDIERS

The problem of education of sons of Service personnel has not yet been satisfactorily solved. The sons of other ranks are the most affected as these

other ranks cannot afford to give their children better and higher education which is an absolute necessity in modern times.

Providing facilities to the young and promising sons of the Service personnel will go a long way not only in making these boys self-supporting at early stages in life, relieving the burden from the shoulders of their parents and consequent rise in the morale and hence the efficiency of the troops, but it will also lead to continuity of Army traditions in various families. All said and done, heredity does matter a lot in developing the attributes of a good soldier, and this continuity and building up of family traditions will go a long way in raising the standards of the Army. It will be interesting to note that over 80 per cent ex-boys are relations of serving soldiers and ex-servicemen.

PROBLEMS OF RECRUITMENT

It has been observed these days that the majority of recruits do not join the Army through a love for soldiering; the attitude is mostly mercenary. It is seen that a greater percentage of men are attracted to the Corps by the facilities that they get for trades training.

In a Boys Unit we would normally get sons of serving soldiers and ex-servicemen who would definitely have a pride in the profession at least due to the fact that it happens to be the profession of their fathers. Secondly, these days there are a lot of avenues open to a boy of 15 who is doing well in education and who is fit to be taken into a boys unit. The very fact that at that stage and age he selects the Army as his career would imply that he joins the Boys Unit due to the love for soldiering as a profession. We will thus get the right material at the appropriate age with the correct background and bent of mind. These are the soldiers who would prove to be better and more dependable specially during war.

In India the need for taking in boys in the Army arises through the general low standard of education which, specially as compared with the requirements of the Corps, is far too low. The technical skill and background of a normal recruit is also low, as our country is mainly agricultural and not industrial. This problem of enrolling boys in other countries does not arise due to their technical and educational advancement.

CONCLUSION

The Corps needs junior leaders who have not only the power to lead but also the will to lead in the right direction. Throughout all training, therefore, emphasis must be laid upon moral instruction and the development of a sense of true moral values. By such training, boys will be developed into valuable men, and from amongst them will be found a high proportion of leaders.

We must therefore have adequate boys trainees in the Corps. These boys must be trained in an independent and separate unit which should be given the full staff required. The subsequent ex-boys' training in the Training Battalion should be progressive. We should aim at taking the ex-boys to the level of unpaid Lance Naiks before they leave the Training Battalion.

These boys, once trained as junior leaders must always be used as junior leaders from the early stages in their service so as to derive the maximum benefit of the training imparted to them. It is therefore necessary that they be considered for their promotions earlier in their career as compared to the normal entry Sappers.

In no circumstances should a boy trainee be enlisted or retained in a boys unit if he shows no promise of fulfilling the role set by the Corps even though he may be considered likely to make an above average recruit. To enrol or retain such a boy means the loss of a valuable vacancy, which might be filled by a really promising trainee.

To get better boys for recruitment to boys unit there must be adequate advertisement and the general public should be aware of the promising careers that their sons will have if they join the Boys Units. It is quite obvious that firstly to derive maximum benefit of the training imparted to the boys to develop them into efficient leaders, they must be considered for their promotions early. This advantage that a boys trainee will have over the normal entry recruit will definitely attract better material to the boys unit.

Appendix 'A'

PROMOTIONS

<i>Srl No.</i>	<i>Rank</i>	<i>Number from normal entry recruits</i>	<i>Actual number from Ex-boys</i>	<i>Proportionate number from Ex-boys on the basis of strength of normal entry recruits</i>	<i>Remarks</i>
(a)	(b)	(c)	(d)	(e)	(f)
1	Subedar	—	—	—	This proves that the ex-boys make better leaders than the normal entry recruits. Moreover it will also be obvious that the percentage of ex-boys gradually increases in higher ranks as the promotions become more and more selective.
2	Subedar	—	2	7	
3	Jemadar	18	14	47	
4	Havildar	95	59	199	
5	Naik	360	211	712	
6	Paid Lance Naiks	469	229	774	

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MEDICAL CATEGORY CASES

<i>Srl No.</i>	<i>Medical Category</i>	<i>No. from normal entry recruits</i>	<i>Actual number from Ex-boys</i>	<i>Proportionate number from Ex-boys on the basis of strength of normal entry recruits</i>	<i>Remarks</i>
(a)	(b)	(c)	(d)	(e)	(f)
1	Permanent Category 'B'	43	4	13.5	This shows that the ex-boys have proved to be better in health than the normal entry recruits.
2	Permanent Category 'C'	71	7	23.7	

COURSES

<i>Srl No.</i>	<i>Course</i>	<i>No. of Normal entry recruits</i>	<i>Number of Ex-boys</i>	<i>Proportionate number from Ex-boys on the basis of strength of normal entry recruits</i>
1	Platoon Weapon NCO Course	13	11	37
2	Air Portability Type 'B' JCO/NCOs	3	1	3
3	PT Assistant Instructor Basic Course NCOs/OR	31	50	160
4	Recreational Training Course	2	4	14
5	Advance Refereshar Course	4	2	7
6	Boxing Instructor Course	4	5	17
7	Swimming and life saving Course			
8	Athletic Coaching Course	2	1	3
9	ASMT D/M NCOs Course	51	45	153
10	Engineer JCOs Works Instructor Course	4	9	30
11	Engineer JCO/NCO Bridging Trade Course	5	6	20
12	Engineer JCO/NCO Bomb Disposal	5	2	7
13	JCO/NCO Building Trade Instructor Course	6	5	17
14	Engineer JCO/NCO Earth-Moving Plant Instructor Course	9	3	10
		144	147	488

Appendix 'D'

TRADE POSITION BY CLASSES

Srl. No.	Class	Number from normal entry recruits	Actual Number from Ex-boys	Proportionate number from Ex-boys on the basis of strength of normal entry recruits	Remarks
1	1	546	151	513	In boys we normally do not get Gharka tradesmen who are definitely very good at their trade. In normal entry recruits, this percentage of such tradesmen is of course dropping down fast.
2	3	1614	546	1856	This proves that an average ex-boy is more proficient in his trade than a normal entry Sapper.
3	3	2562	866	2944	Percentage of ex-boys in low trade class is less.
4	4	842	39	139	

Appendix 'E'

DISCIPLINE CASES

Srl. No.	Nature of Disciplinary cases	Number of cases in respect of normal entry recruits	Actual number of cases in respect of Ex-boys	Proportionate number of cases in respect of Ex-boys on the basis of strength of normal entry recruits	Remarks
1	GCM/SCM	196	23	77.74	This proves that in discipline the ex-boys are better than the normal entry recruits.
2	Absentees/ Deserters	1059	147	497.40	

Appendix 'F'

EXAMINATIONS PASSED

Srl. No.	Examination	No. from normal entry recruits	Actual number from Ex-boys	Proportionate number from Ex-boys on the basis of strength of normal entry recruits
1	IA 1st and above	905	267	916
2	IA 2nd	2089	1147	3924
3	IA 3rd and below	2518	192	658
1	MR 1st	731	346	1177
2	MR 2nd	2727	1035	3521
3	MR 3rd	2006	221	772

ATHLETIC ACHIEVEMENTS

Appendix 'G'

Serial No.	Event	Trained Soldiers			Recruits			Total			
		Normal entry	Ex- boys	Equivalent Ex-boys	Normal entry	Ex- boys	Equivalent Ex-boys	Normal entry	Ex- boys	Equivalent Ex-boys	
1	Athletics	...	13	7	28	18	5	75	31	12	103
2	Swimming	...	16	5	20	2	19	285	18	24	305
3	Hockey	...	14	7	28	7	4	60	21	11	88
4	Football	...	9	5	20	7	3	45	16	8	65
5	Basketball	...	6	5	20	---	8	120	6	13	140
6	Boxing	...	3	13	52	---	15	225	3	28	227

UNITED STATES AIRBORNE

By Captain WILLIAM J. LIELL

The first American soldier to parachute from an aeroplane was Captain Albert Berry. On March 1, 1912, he jumped from an altitude of 2,000 feet over Jefferson Barracks in Missouri. Both Albert and his father, John were Army Captains, and amateur balloonists. Again, in 1928, a squad of soldiers made an exhibition jump at Kelly field, Texas. They assembled crew, served weapons and ran a short exercise. This jump, like the first, was regarded as a stunt of no practical value, and was soon forgotten.

In the early 1940s, however, military parachuting began to be looked upon in a far more favourable light. With the prospect of a world war on the horizon, the Infantry Board at Fort Benning, Georgia, found themselves charged with the responsibility of organizing and training a test platoon of parachutists. Volunteers were accepted from the 29th Infantry, and on July 11, 1940, organization of the platoon began. The first jump was made from a C-33 transport plane on August 16, 1940. Private Joseph King was the first enlisted man to make a jump. He jumped after First Lieutenant William T. Ryder over Lawson Army Air Field, also at Fort Benning. On August 29, the first mass drop of the entire platoon was successfully conducted.

Organization of combat units quickly started. The first combat parachute organization was the 501st Parachute Battalion commanded by Major William T. Miley. It was later designated the 1st Battalion, 501st Parachute Infantry Regiment. Another airborne experiment pursued was the idea of "air landing units". The 550th Airborne Battalion was organized in Panama in July 1941 and the 88th Infantry Battalion at Fort Benning in September. Both were air landing rather than parachute or glider organizations.

The Marine Corps also operated a parachute school at Lakehurst, New Jersey, during the latter part of 1940. Later, schools were opened in Virginia and on the west coast of the United States in California. Though four battalions of paramarines were constituted, they were never employed in an airborne role. Three did, however, see some magnificent ground fighting in the Pacific Theatre of Operations.

IN WORLD WAR II

During World War II the Army employed five divisions of airborne troops. The divisions were composed of both parachute and glider elements. There also existed several separate parachute battalions, regiments, and one combat team. Parachute units were assigned a three-digit numerical designation starting with the number 5, such as the "504th Parachute Infantry Regiment." Designations of glider units began with the figures 1 and 3. For example, the 188th Glider Infantry Regiment and the 327th Glider Infantry Regiment.

The first United States combat parachute operation during World War II was a failure. It took place on November 8, 1942, when the 2nd Battalion of the 509th PIR flew for twelve hours from Land's End, England, and jumped at Oran, Algeria. Incidentally, this flight of 1,600 miles was the longest tactical parachute flight in history. Their mission was to secure two French airports at Tafaraoui and La Senia, and await a link-up with friendly ground forces. Some of the jumpers dropped miles from the objective. Some hit at Lourmel, thirty miles away. They all had to hike to the objective

area. By the time they reached the objective, it was occupied by friendly forces.

The second mission came on November 15, 1942 when thirtythree troop carrier aircraft dropped the same battalion on the Youks-les-Bains airport of Thelepte, near the Tunisian border. They landed right on top of an entrenched enemy battalion! The two opposing commanders held a hurried conference, and the objective was surrendered to the paratroopers.

On November 26 the third and final American combat drop in Africa was made from three aircraft by 28 American and two French soldiers. Destruction of a railroad bridge north of El Djem was their mission. For some reason or another, the troopers could not locate the bridge. The following day they blew up railroad tracks, and demolished an armoured train. The soldiers then split into small groups and headed for friendly lines, 70 miles to the west. Of the entire group, only six returned.

The 82nd Division, the first division to be designated "Airborne", left the United States on April 29, 1943, and landed in Casablanca, Morocco, on May 20. They quickly established themselves, and on July 9 a combat team (505th PIR, 3rd Bn. of the 504th PIR, and artillery and engineers) conducted the first night parachute jump of the war. Two hundred and twenty seven C-47's carried the paratroopers in support of operation "Husky", the code name for the invasion of Sicily.

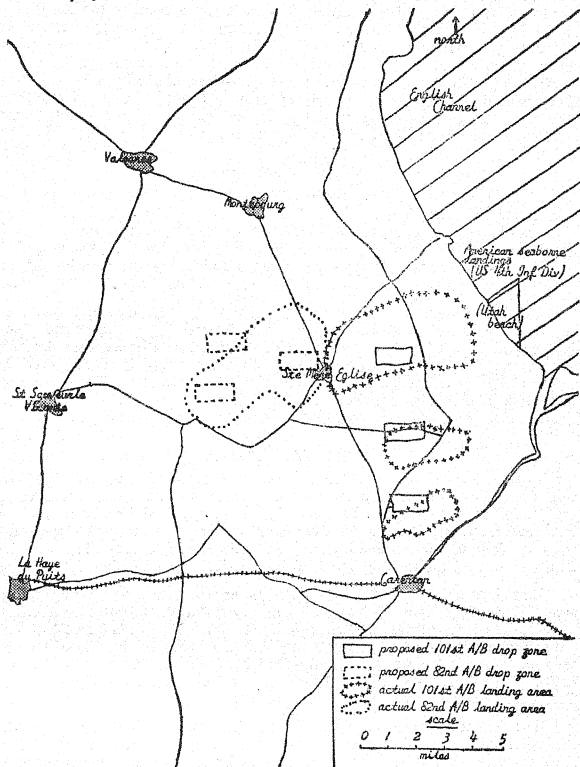
BIGGEST MISHAP

The parachutists had the task of securing communication facilities and key road nets leading to the beaches where the Allies were executing an amphibious landing. A British Airborne Brigade simultaneously landed on the eastern half of the island. The biggest mishap of parachute operations occurred during this operation. The 504th RCT was making a follow-up drop on the evening of the 11th. Faulty communications or liaison accounted for the United States Navy mistakenly shooting down 23 plane-loads of Allied paratroopers. Despite these losses, the paratroopers succeeded in delaying enemy reserves from reaching the beaches, thus contributing greatly to the success of operation "Husky".

The 503rd PIR and an Australian artillery battery performed the next combat jump at the village of Nadzab on New Guinea. Eightyfour transports carried the troopers on the first Allied parachute operation in the Pacific during World War II. The village was located in a very flat, open valley. There were also a few plantations and a small airstrip about a half a mile southwest of Nadzab. At 10-20 a.m. on September 5, 1943, combat aircraft suddenly appeared over the objective, and bombed and strafed the area with cannon and machine-gun fire. Just before the troop carriers appeared on the scene, the combat planes laid three smokescreens that hid the view of the drop zones from the village.

The C-47's dropped the 503rd and the artillery unit on three predetermined drop zones surrounding Nadzab. The mission of securing the area was comparatively simple as there was very little ground opposition. Australian infantry and engineers paddled down the Watut and Markham rivers to meet the paratroopers. The meeting was uneventful, and together they started improving the antiquated airstrip. By dawn of the following day, aircraft were landing and taking off from Nadzab.

Normandy—June 6, 1944



On the 13th day of the same month, the 504th PIR dropped at Salerno on the western shore of Italy. The 505th followed the following evening. The operation took place to relieve the pressure on the strategically important Salerno beachhead. The jump could have been a failure, because the parachutists were scattered over a wide area throughout the night. The outcome was bright, however, because the enemy was forced to divert a large number of combat troops from the coastal area to engage the parachutists.

Britanny, France, on June 6, 1944 found the 82nd and the 101st Airborne Divisions participating in the most extensive night parachute operation of

all time. At 00-15 hours on the sixth, twenty aircraft dropped pathfinders to mark six landing and drop zones that were to be used by the Americans. Major-General Maxwell Taylor's 101st Airborne Division dropped northwest of Carenton, while the 82nd jumped on Ste Mere Eglise. The successfully taken objectives of the 101st were Carenton and the causeways leading to the beaches. The 82nd, commanded by Major-General Matthew B. Ridgeway, accomplished their mission of seizing crossings over the Merderet river. This action thus prevented the enemy from counter-attacking and driving the Allied seaborne effort back into the English Channel.

IN THE PACIFIC

Meanwhile, in the Pacific, the evening of July 3-4, 1944, found the 503rd PIR attacking Noemfoor Island. This 15-mile circular island is situated between the island of Biak and New Guinea. During the summer of 1944 it had two airstrips and was used as a staging area by the Japanese. The smallest airstrip was at Korrasoren, while Kamiri was the location of the largest.

Actually, Noemfoor was taken by an infantry RCT that had landed by boat on the morning of July 2, and had secured it by that same night. The amphibious landing went better than had been anticipated, but the drop was carried out as scheduled. At 10-00 hours on July 3, B-25 bombers appeared, dropped bombs, and immediately left the scene. Simultaneously, three A-20's laid a smokescreen west of Korasoren to hide the drop at Kamiri. The paratroopers jumped and quickly occupied positions.

FIRST TASK FORCE

The 1st Allied Airborne Task Force was activated on July 15, 1944. It was established to participate in operation "Dragoon", the invasion of southern France. In 1944 the 7th US Army supported by Western Naval Task Force and XII Tactical Air Command was preparing to invade the south coast of Toulon. The mission of the 1st AATF was to move in successive airlifts from airfields in Italy and land in the vicinity of Le Muy, France.

Five days prior to D-Day the units started to close into the marshalling area. They closed by 18-00 hours the day prior to the drop. Missions were assigned as follows; 509th Battalion Combat Team land at DZ-C and occupy a position area, prevent movement of enemy forces within its assigned area, and assist by fire the 2nd Independent Parachute Brigade (British). 2nd Brigade drop at DZ-O and capture Le Muy. 517th Combat Team drop at DX-A and neutralize La Motte.

The TF took off from nine airfields in Italy and headed across the Mediterranean. At 04-30 hours on August 15 the 509th CT dropped. Five minutes later, the 517th landed on DZ-O. Enemy contact was immediate. At 09-30 the first glider serial landed in DZ-O. The Task Force Command Post was set up by 18-00 hours and contact with all elements was established. At 18-00 hours the second glider lift arrived, and one hour later the entire Task Force had landed. The enemy was driven out of all areas except Le Muy. The 2nd Brigade was having a difficult time taking the town.

The 50th was assigned the job. The battalion attacked at 02-30 hours on August 16 but they too were repulsed. They withdraw at 06-00 hours and counter-attacked at 11-30. The paratroopers captured the town by 14-55 that afternoon. Contact with friendly ground forces came at 18-35

on the 16th when the 509th made contact with the US 45th Infantry Division. This climaxed the airborne phase of the operation.

OPERATION 'MARKET-GARDEN'

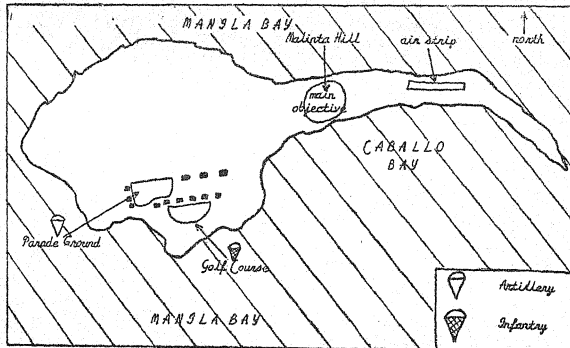
Operation "Market-Garden" was carried out by the 1st Allied Airborne Army. "Market-Garden" was the code name assigned to the drop at Nijmegen, Eindhoven and Arnhem. These locations were the objectives of the US 82nd, US 101st, and British 1st Airborne Divisions respectively. The seizing of these three areas would provide a speedy avenue of approach right to the border of Germany. The drop took place on the 17th of September, 1944. The American drop fared quite well. There was little ground wind and no significant opposition on the DZ's. Toward nightfall German artillery began to find the range of some of the paratroopers' installations.

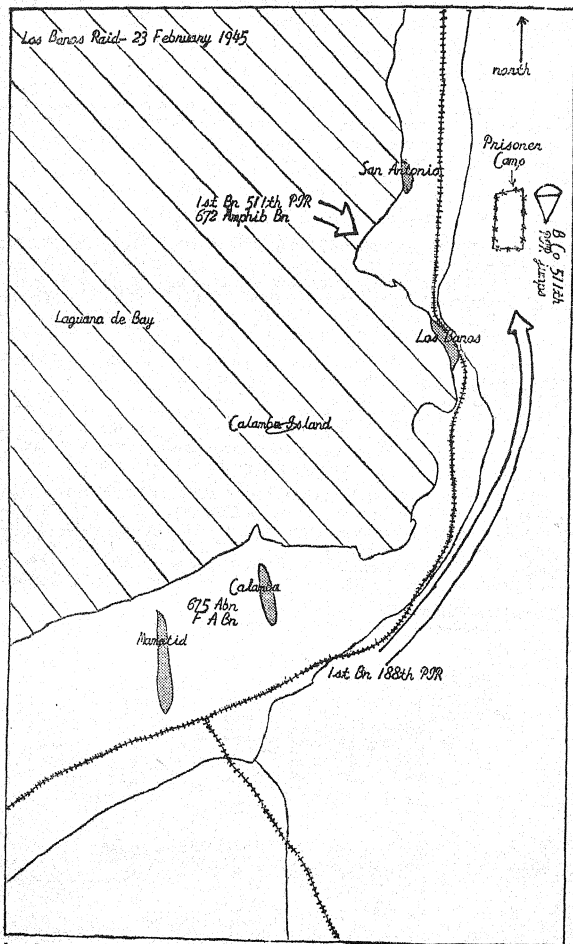
The British "Red Devils" did not fare as well. They were dropped farther from friendly ground forces than the two American Divisions. Bad weather closed in to further complicate the situation. Neither aircraft nor ground forces could reach the beleaguered British Division. They took a terrible toll in casualties. The Division's ranks were so depleted as a result of this operation that the 1st Airborne was soon after deactivated.

Tagaytay Ridge is 25 miles south of Manila on the island of Luzon in the Philippines. The 511th Combat Team made the first combat drop of the 11th Airborne Division here on February 3, 1945. The jump was made from C-47's travelling in a "V of V's". The planes arrived over the drop zone in three echelons. Two came in on the 3rd, and the third echelon jumped the next day. There was no resistance as the paratroopers landed on the ridge, and they quickly moved off on their assigned tasks.

The 503rd RCT earned the nickname, the "Rock", after their spectacular three-hour daylight drop on Corregidor on February 15, 1945. They marshalled on Mindora Island before the attack. C-47's flying in trail headed for two drop zones. The Infantry jumped on a golf course, and the artillery landed on the parade ground. The drop started at 08-00 hours, and by 11-00 the airhead was secured. AB-17 bomber control plane supervised the

Corregidor—February 15, 1945





Las Banas Raid—February 23, 1945

dropping of the parachutists as it flew in a circle observing the drop. The main objective was Malinta Hill with its underground rooms and passageways. The enemy was caught off guard by the parachutists and hundreds were either killed or captured.

THE GREAT RESCUE

Over 2,000 Allied prisoners of war at an internment camp near Los Banos, Luzon, were rescued on February 23, 1945 by paratroopers of the 11th Airborne Division. A combined operation of several elements of the Division made the rescue possible. The 1st Battalion of the 188th Glider Infantry Regiment made a diversionary ground attack, B Company of the 511th PIR dropped from nine C-47's and the remainder of the 1st Battalion, 511th, came in by amphibious tractors.

The attack started at 07-00 hours on the morning of the 23rd. As the troop-carrying aircraft appeared, artillery started to bring fire on the Japanese positions. The glidermen of the 188th started for their first objective, Lecheria Hills. Firing went on all day and by 17-00 hours the rescue of the prisoners was completed. More than 2,000 internees were evacuated by the men of the 672nd Amphibious Tractor Battalion, and the "Angels" of the 11th Airborne Division.

OPERATION VARSITY

The next combat airborne operation of World War II was operation "Varsity". Paratroopers of the 17th Airborne Division and the British 6th Airborne Division made the jump across the Rhine river into Germany on March 24, 1945. C-46's flying in a V of V's headed towards a drop zone on the plains near Wesel, Germany. Friendly aircraft made raids deep into enemy territory in order to divert enemy aircraft from the dropping area.

This drop, which took place at 10-00 hours, was significant for three reasons. First, because the troopers dropped after the ground forces had started their amphibious assault across the Rhine. Second, it was the first Allied airborne operation that had both the ground elements and the air forces under the command of one man. Third, because it took place within range of friendly long-range artillery. In a little over two hours, 17,000 parachutists landed from approximately 1500 aircraft and 1300 gliders. They quickly linked up with the Ninth US Army and continued the remainder of the campaign in a ground role. Operation "Varsity" was the last significant combat parachute drop of World War II in the European Theatre.

GLIDERS IN THE PICTURE

The first and only airborne operation in the Pacific Theatre in which gliders were employed was the drop at Camalanigan Airfield. The airfield is about a half a mile south of Appari in the Philippines. "Gypsy Task Force" was composed of a reinforced battalion of the 511th PIR and seven gliders carrying a battery of parachute artillery. Smoke was laid to harass the enemy observers in the hills overlooking the drop and landing zones.

Three waves of C-47's carrying paratroopers passed over the DZ. One at 09-00, the second at 09-15 and the third at 09-30. The gliders carrying the artillery came in at 09-30 and landed at the T-shaped airstrip. The parachutists were virtually unopposed as they seized the airstrip and turned south to join up with the 37th Infantry Division in the Cagayan valley between the

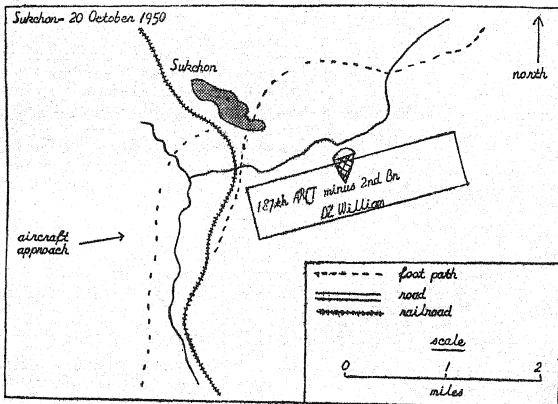
Panet river and Alcalá. The meeting was consummated on June 26. This jump was the last airborne operation of World War II executed in the Pacific.

During the Korean conflict the U.S. employed one Regimental Combat Team in an airborne role—the 187th Airborne Regimental Combat Team, formerly of the 11th Airborne Division stationed at Fort Campbell, Kentucky.

On October 1, 1950, the 187th ARCT moved to Kimpo airfield under the supervision of its commanding officer, Col. Frank S. Bawgen Jr. On the 18th the Regiment received a warning order for a jump in the vicinity of Sukchon-Sunchon on the twentieth of the same month. The general mission of the paratroopers was to drop in the vicinity of these two towns and cut off the escape of retreating enemy forces. A secondary mission was to rescue friendly prisoners of war thought to be on a train carrying them deeper into North Korea.

8,000 ENEMY TAKEN

The day of the jump, October 20 was a clear day, with very slight winds. One hundred and ten aircraft in formations of V of V's headed toward two drop zones separated by 16 miles of enemy country. The 3rd Battalion dropped at 14-06 hours with the mission of seizing Sukchon, and establishing a roadblock to prevent the enemy from withdrawing to the north. The 2nd Battalion captured Sunchon with comparative ease. Unfortunately, the paratroopers missed the prisoner train which had left the area before the drop

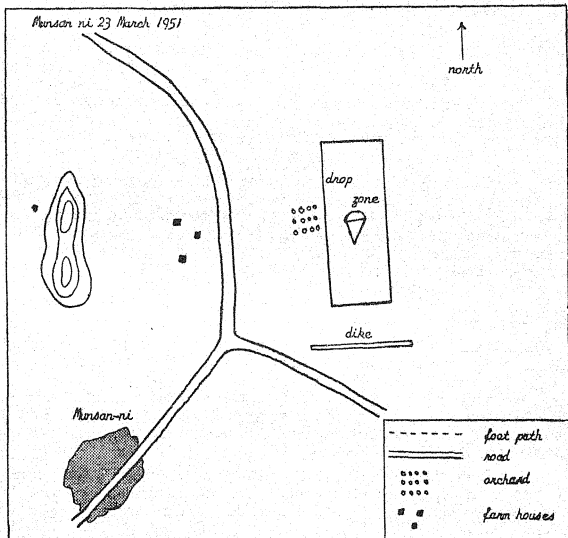
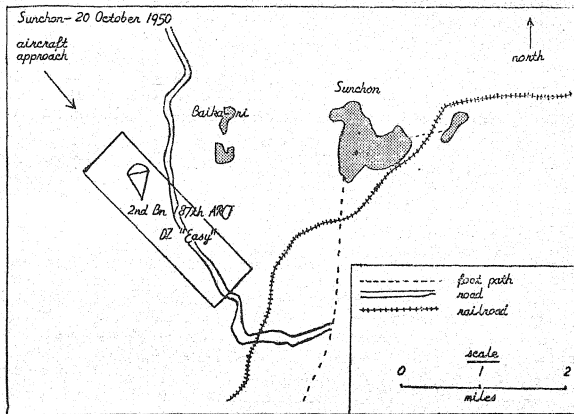


Sukchon 20, October, 1950

took place. The 187th was successful, however, in that they captured 8,000 of the enemy. In the early morning hours of the following day, elements of the 1st Cavalry Division made contact with the paratroopers.

The next combat drop was originally scheduled for Chunchon, but was later changed to Munsan-ni. On February 28, 1951, the 187th ARCT was bivouacked at an airfield outside Taegu in South Korea. That same day they

Suncheon, 20 October, 1950



Munsan-ni 23, March, 1951

received an alert for a possible jump that was scheduled to take place three days later on the 23rd. The enemy was retreating north and the United Nations forces were close behind.

The plan called for the 3rd US Infantry Division to cross the Han river early on the morning of the 23rd. The 187th was to drop near Munsan-ni, block the main supply route near the Imjin river and destroy the 19th North Korean Infantry Division. A link-up was to occur later that afternoon.

At 09-00 hours on the 23rd, the first serial of C-46's and C-119's left Taegu and headed for enemy country. At 11-00 hours the entire Regiment minus the 1st Battalion began to drop on one enormous DZ. An Indian Army Medical Team and two US Ranger companies also took part in this drop.

The parachutists gathered into their respective assembly areas, and covered their assigned portions of the perimeter. The 2nd Battalion jumped 200 yards west of the Regiment proper to secure some hilly terrain that dominated the main DZ. The 3rd Battalion dropped on the south side of the DZ and established their portion of the airhead line on the high ground south of the DZ. The 1st Battalion parachuted about three miles farther south of the main DZ to clear up small pockets of enemy resistance. Later that day they joined the rest of the Combat Team on the principal DZ.

There was small arms fire on the DZ, and also enemy mortar and artillery fire dropped sporadically into the perimeter for the remainder of the day. At 17-00 hours that evening, friendly armour reached the paratroopers. This drop, Munsan-ni, was the last combat airborne operation of the Korean conflict.

The Airborne Air Mobility Department of the Infantry School at Fort Benning still, as in 1940, trains parachutists. After completing three weeks of training, during which time the student makes five parachute jumps, the novice is awarded a parachutist badge. American paratroopers are also awarded a Senior Parachutist badge after completing 35 jumps, and a Master Parachutist badge after completing 60 parachute drops. Many of these jumps must be at night, and some as Jumpmaster or "stick leader".

A very complex and extensive Airborne area occupies several acres of Fort Benning. Three 250 ft. towers are used to teach students how to manipulate the parachute while in the air, and finally how to land. Huge buildings house parachute packing, storage facilities and classrooms at Lawson Army Air Field. Since its inception in 1940, approximately 250,000 Allied and American soldiers have earned their parachute wings here. In addition to basic parachute training, the Airborne Air Mobility Department also conducts courses in Pathfinder operations, Jumpmaster training, and Air Transportability techniques.

The XVIII Airborne Corps at Fort Bragg, North Carolina, is the highest Airborne Headquarters in the U.S. Army. It is now composed of the 82nd Airborne Division and the 101st Airborne Division. The 101st is located at Fort Campbell in southwestern Kentucky, while the 82nd has been stationed at Ft. Bragg since its return from Europe after World War II. The United States also maintains two Airborne Battle Groups in Germany, and one on Okinawa.

Fort Bragg is also the home of the Special Forces. Special Forces techniques call for small groups of parachutists to contact friendly civilians in enemy occupied lands, and to school them in guerilla and counter-guerilla warfare.

THE ANTITANK MISSILE

By I.C. MENON and A.S. NAGRAJAN

WHY THE ATGM?

In any future war, conventional weapons will also be employed along with atomic arms. Tanks, by virtue of their ability to act as a mobile source of conventional firepower, would obviously be used by an enemy and thus constitute a menace to the ground forces. Anti-tank defence will therefore be a major problem in infantry tactics. The main objective of anti-tank defence is to prevent the bulk of enemy armour from penetrating infantry positions, passing between dispersed units or going around them to overrun rear areas. The need is to kill the tank when it is (at least) a mile or two away.

It has been the general military practice to engage tanks by tanks mounted with high-velocity guns, though infantry have been employing guns, recoilless rifles and last-ditch weapons like bazookas against armour. With unguided projectiles accuracy at any range requires a high velocity; but a higher velocity means a heavier gun and less mobility.

A shaped charge warhead can enhance the 'kill power' of the projectile. But a high velocity is not desirable from the point of view of a hollow charge warhead as the penetrating power of shaped charges is greatest only when static. If slower, the shorter becomes the projectile's range. Besides, of the different applications of shaped charge, the least successful has been use with conventional guns, since the spin of the projectile interferes with the efficiency of the shaped charge reducing performance by 30 to 70 per cent. Smooth bore guns may be more efficient. (According to recent reports, a $\frac{1}{4}$ -ton, 90 mm, non-recoil, smooth-bored and highly mobile anti-tank gun has been developed in Sweden). So the use of unguided, hollow charge weapons (shells) appears limited in range and performance. An acceptable combination of kill power, mobility and range thus remains difficult to secure.

However, the anti-tank guided missile (ATGM), which is fundamentally a self-propelling rocket that carries a guidance system for in-flight control and a shaped charge for target destruction, promises a light weight, long-range anti-tank weapon of a very high degree of accuracy. The first generation of ATGMs, now available, suffers from such limitations as a short range, a low rate of fire, high cost of training, etc. Nevertheless, the ATGMs can effectively complement the short-range weapons. Employment of the many useful anti-tank weapons in an organised and effective manner will secure an adequate anti-tank defence in depth.

THREE VARIETIES

Ten ATGMs have so far been released for evaluation and acceptance; two more are reported under development. These include (i) the *infantry* weapons: the 'flyweight' Swedish Bantam and the 'lightweights' like the German Cobra, her Swiss sister Mosquito, the Vickers Vigilant, the French Army Entac and the veteran Nord SS-10; (ii) the versatile 'welterweight' SS-11; and (iii) the *vehicle-borne* missiles: the 'middleweight' Pye Python, the 'light-heavy' SS-12 and the 'heavyweight' Australian Malkara. Still under incubation are the infantry weapons: Nord Acam and the Japanese Mat.*

* Tables I and II on pages 163 and 164 give data regarding physical and performance characteristics of the missiles.

The choice between the large 'cavalry' missiles and the smaller infantry weapons is one of military policy. As weapon systems, they are complementary. The continental European armies confronted with hordes of Russian armour (about 60 mechanised divisions are reported), have been favouring infantry weapons. Spurred by the painful memories of a black period of six weeks in 1940, when over 100,000 French soldiers were overrun and killed by advancing columns of German tanks, in 1945 France conceived and designed the SS-10, the founder of the modern family of ATGMs, on the lines of the wire-controlled German X-7. Since then the French have remained pioneers in this field. The Nord 'sisters', SS-10 and SS-11, hold the record for the largest sales. Britain has high stakes on the vehicle-borne Malkara, which incidentally is not favoured by the Australians. Recently the home-made Vigilant has also been ordered by Britain for evaluation. The Americans have been experimenting on the marriage of the French SS-10 and SS-11 missiles to helicopters and fixed wing (Army) aircraft. The US Marines are evaluating the lighter German Cobra; while Germany herself has some orders for the multi-purpose SS-11 also. Two infantry divisions of the Belgian Army are being equipped with the French Entacs.

An appreciation of these weapons is attempted here. It may be stressed that **lightweight vis-a-vis kill power** has been an important factor in the evolution and evaluation of these missiles.

WARHEAD

Even in a cursory study of any weapons system, the 'lethal payload' gets top-priority. For, what else matters more in a weapon than its payload's performance?

The warhead of the ATGM has to do more work than a kinetic energy projectile. In order to leave time for guidance, the missiles fly at slow subsonic speeds, i.e., just 300 ft./sec. in the case of most of the infantry weapons. Therefore the warhead lacks a rifle-fired shell's penetrating ability resulting from the shell's own speed (i.e., about a few thousand ft./sec.). Still it must blow in a hole in the target before blowing up the tank itself. This calls for a tricky two stage warhead with a cunning fuse design. The hollow charge warhead, which is more effective when static, provides a convenient answer.

SHAPING OF CHARGE

The explosive charge of the warhead is hollowed out at the front in the form of an involute cone. This 'shaping' enhances effectiveness and also reduces the weight of the explosive. The charge is detonated by a fuse triggered on impact of the forward pointed probe, which ensures detonation at the required stand-off distance.

(In the Nord weapons, the fuse is armed by pressure from the sustainer rocket, so that premature explosion is impossible. The Vigilant has a pressure switch and an inertia timer. The warhead of Cobra is automatically armed at 3 seconds after launching. The Mosquito has an unusual feature of 'arming' the warhead. The fuse of the hollow charge is armed by a signal from a pre-set clockwork mechanism or by a positive action by the operator through an 'ad hoc' wire when it is in the target's vicinity and ahead of friendly troops.)

On ignition, the thin metal liner of the conical cavity forms a long, thin jet of very high velocity (near 30,000 ft./sec.). This fierce jet pierces, much in the manner of an oxy-acetylene flame, more than a foot of armour, forming a

hole of relatively small and progressively diminishing diameter. On punching through thick armour, the jet may have little residual energy to wreak havoc inside the tank. A hole is never a kill. Hence in the case of hollow charge warheads, a balance has to be struck between penetration ability and residual kill power. Though details are classified, all the known infantry anti-tank missiles use shaped-charge warheads. The availability of small armour-piercing hollow charge warheads has, in fact, been a decisive factor in the evolution of the light 'infantry' ATGMs.

PENETRATION

The average depth of penetration claimed for most of the hollow charge warheads is 16 inches of armour at normal incidence. Cobra and Mosquito are said to penetrate even 21 inches. Considering the sloping surfaces of the turret (3 to 4 inches thick) and glacis plate, angles of incidence of about 70° seem more probable. At such high angles of incidence, the penetration depth may be less than half of that at normal incidence, i.e., 16 inches. The potentialities of the hollow charge are being explored further. The wish is for warheads clever enough to form a non-tapering hole through which the missile can insert something highly destructive!

The alternative of using heavier high explosive plastic or squash head (Hep or Hesh) rounds, which achieve target defeating effect normally without penetration, seems to have been favoured by the British, in the abortive development of their Fairey 'Orange William' missile. Some missiles use suitable anti-personnel and fragmentation warheads also.

Atomic warheads, less than 6 inches in diameter and of sub-kiloton yield, are now in production, e.g., Davy Crockett, a 'pocket-size' U.S. atomic 'projectile'.* Obviously it should be possible to arm vehicle-borne anti-tank missiles with such warheads. It is reported that the Nord SS-12 would eventually be capable of carrying a sub-kiloton warhead. The third nuclear device "of slight power" exploded recently by France towards perfecting "an everyday model" atom bomb indicates that nuclear warheads small and compact enough for her short-range rockets should, in due course, be within France's reach also. The explosion of such devices in the immediate vicinity of any armoured vehicle would be more than sufficient.

By and large, the payload to launch-weight ratio is around 30 per cent for all the ATGMs and this percentage is considered approximately double that of an average anti-tank shell.

The ratio of warhead weight to overall missile weight is the highest for the British missiles, Vigilant (38.71 per cent) and Python (37.5 per cent). This is perhaps compatible with the British consideration that destructibility is the most important factor. However, such a ratio is not a sufficient index of a weapon's performance. Heavier warheads would normally entail heavier missiles but Vigilant is light enough and can deliver sufficiently effective payloads varying from 5 to 12 lb. The hollow charge warhead of Cobra (5.5—8.8 lb.) is lighter than that of SS-10 (9—11 lb.); yet its penetrating ability is claimed to equal that of the heavier French rival. Explosives form 60 per cent of the weight of the shaped-charge warhead of Cobra; the corresponding

* The U.S. air-to-air Falcon is reported to have a similar nuclear warhead.

percentage is less in the case of SS-10 and SS-11. Malkara carries the largest warhead (60 lb.), quite commensurate with its size.

GUIDANCE

More than the warhead, it is 'guidance' that distinguishes the ATGM from a projectile and confers on it the merit of accuracy.

The ATGMs are unusual among missiles in that human eyes, brain and hands form an integral and important part of the control servo-loop. The wire-fed command guidance, using visual tracking whereby the missile is directed along the operator's line of sight to the target, is simple, immune from counter-measures and cheap; but restricted to good visibility, slow-speed missiles and a range of a mile or two.

The observant operator computes mentally the commands necessary to correct any deviation in the missile's flight-path towards its prey. By appropriate movements of a 'joystick', he passes on the commands in the form of varying electrical impulses through a wire link to the control mechanism in the missile; the wires being paid out from the flying missile.

The actuating mechanism on board the missile consists of either 'flip-flop' spoilers on the trailing edges of the wings or 'jet interrupters' vibrating in the propulsive jet from the motor. Aerodynamic wing control is adequate at the low speeds of SS-10 (180 m.p.h.), Cobra (190 m.p.h.), Mosquito (190 m.p.h.), Bantam (190 m.p.h.) and Entac (190 m.p.h.). Even the much faster Vigilant (340 m.p.h.) manages with wing-mounted surfaces. But the faster SS-11 (425 m.p.h.) and Python use jet-deflection control. For, spoilers are considered incompatible with swept-back wings of the faster missiles. Besides 'jet thrust control' has the advantage of rendering the response to signals independent of flight conditions like air density.

PSYCHOLOGICAL ASPECT

In response to the demands from the operator, the 'actuators' produce a lateral velocity or a lateral acceleration of the missile, across the operator's field of view, exactly proportional to and in the same direction as the demand signal. The velocity type control is simpler to learn and retain as it comes more naturally to the operator both during training and during actual firings. He is thus spared the tedium of 'mental integration', inherent in the acceleration type control involved in guiding a missile like SS-10. The Vigilant has a rational velocity control which incidentally permits the missile a greater speed also. The manufacturers of Cobra also have swung over to this simpler system. Python manufacturers are reported to have evolved, after systematic and careful trials with many operators, 'an optimum wire guidance system'—a combination of velocity and acceleration controls. Obviously there is much scope for further psychological research.

Usually the commands are to effect control in pitch and yaw only. The missile slowly rolls in flight to neutralise any asymmetry of manufacture. Taken together such rolling and the unsteadiness caused by the gunner's lack of skill and nerves cause a spiralling trajectory. (A similar experience is common in kite-flying). Consequently the missile flies through an imaginary tunnel of air, the diameter of which varies inversely with gunner skill and randomly with missile characteristics. The target is a tank whose centre of critical mass is hardly 2 to 3 yards above ground level. (The latest trend seems to be for tanks with a low silhouette e.g., British 'The Chieftain'.) Thus there is the danger that the spiralling missile may 'skim' too close to the ground. Such

'skimming' is of concern particularly during the level, terminal phase of flight of missiles with a relatively large span e.g., SS-10. Malkara (29.5 in. and 31 in. respectively).

Though simple, a wire link is a limitation on speed and range. Around 500 ft./sec. seems to be the ceiling to the rate at which a wire-fed weapon can pay out its life-line.

High-speed, long-range missiles will thus have to rely on wireless (command) guidance which, besides being more costly, is also vulnerable to electronic jamming. The SS-12 and the Tigercat (a surface-to-surface British missile which may possibly be used in an anti-tank role) are reported to have a radio or radar command guidance system.

'Beamrider' guidance where the missile follows by itself the axis of a radar beam aimed at the target is also possible, but is limited in range. 'Passing homing' by which a missile steers itself towards the target in response to some optical or thermal characteristic of the latter may be employed, especially during the terminal stages of a missile's flight. An infra-red guidance system is said to be under development for the SS-11. Active or semi-active homing radar systems preceded by command guidance during the initial phase are other alternatives.

But any such attempt to transfer, partially or totally, the solution to the guidance problem from the launcher to the missile would increase the complexity, weight, size and cost of the latter, besides demanding more attention to the problems of handling, storage and pre-firing checkouts for reliability of all the components. For, as in a wire-controlled weapon where the reliability (of performance) of the human operator is the key to success, in a sophisticated self-contained missile 100 per cent reliability of each component of the guidance complex is essential.

SPEED

In the case of all wire guided missiles, gunner reaction time and the nature of the communication link impose undesirable restrictions on speed. All the known ATGMs are subsonic. The slower the speed, the longer the flight time to maximum range, i.e., about 10 to 20 seconds for a range of just one mile. This would permit easier manoeuvrability, but limits the rate of fire. The maximum possible rate would be 3 per minute in the case of all infantry weapons except the faster Vigilant.

Besides, the longer the flight time the greater is the scope both for offensive action by enemy forward troops and for evasive tactics by enemy tank crew. Such counter-measures are likely to be more effective, especially when the enemy can spot the firing of a missile, both from the flash and from the cloud of debris or dust which its boost charge would generate in sandy soils. The threat of offensive action by enemy troops necessitates the operator being far away from the launcher, while remaining coupled to it by a cable. Lest the weight-carrying capacity of the soldier be unduly strained, the cable length is limited to 50 or 100 ft. Similarly, the vehicles carrying the cavalry weapons may also be subjected to enemy fire. It is considered that tank versus tank warfare is a game of kill or be killed and the tank (or any armoured vehicle) that misses with its first shot rarely gets a chance for a second. As an evasive measure, perhaps in 10 seconds an entire armoured formation can hide itself behind a smoke-screen of its own making, adding to the complexities of the gunner's task.

Normally a slow-flying missile needs relatively large wing surfaces. Large wings, usually of metal-covered wood, would limit the missile's ability to fly through vegetation. A large span also renders the installation on a vehicle of several guided missiles (like the SS-10 or Malkara) considerably difficult.

RANGE

Unlike in the case of a projectile, the flying range of the ATGM is independent of its (initial) speed. The missile is quickly boosted to flying speed by a high thrust solid booster and sustained thereafter by a second stage solid fuel motor. The maximum possible flying range largely depends on the weight and efficiency of the sustainer charge. (The weight of the ICI rocket motor propelling the Vigilant is about 8 lb., i.e., 25 per cent of missile weight). Most of the missiles have a maximum range of just one mile; SS-11 can fly two miles and SS-12 up to four miles.

Obviously, the need for greater mobility limits the weight of propellant carried and thus the maximum possible range. The development of more efficient, smokeless solid fuels should make it possible to secure greater ranges without adding to the weapon-weight.

While the ATGM permits a great extension in range, a finite **minimum range** is a tactical handicap of present-day missiles. For, it takes a few seconds to fire and gain control over the soaring missile (the take-off angle is about 15° to 25°), steer it downward and get it nicely lined up on the target. Even the best co-ordinated soldier cannot stabilize the missile during the first 5 or 6 seconds of its flight. During this time the weapon flies an appreciable distance. The minimum range is not less than 200 yards even in the case of missiles like the Vigilant, Malkara and SS-10. With other missiles, including Cobra, it is much more. The need is for a guided weapon which can be fired like a shell on a sensibly flat trajectory.

AIRFRAME

The physical details deserve as much attention as performance characteristics like speed, range and lethality. The airframe is a compromise between subtler performance requirements and adaptability to rugged battlefield conditions. The attempt is to minimize size and weight and to facilitate cheap manufacture. Major portions of the air frame of all the missiles are of reinforced plastic. The light weight and low cost of Cobra are attributed to the extensive use of plastics—a tribute to the vast potential of West Germany's chemical industry. The airframe of the 'featherweight' Bantam also is constructed almost entirely from laminated glass reinforced plastics.

Miniaturization of the electronic gear by using transistors (rendered possible by the advances in solid state physics), is another important factor in keeping a missile's weight within reasonable bounds (e.g. Vigilant).

The missiles should be able to withstand the adverse effects of vibration, impact and shock, extremes of temperatures and dust, and be waterproof and quite handy. The French Army is reported to submit samplings of all deliveries (of SS-10) to severe shock, vibration and climatic tests, after which only 4 per cent of failures are tolerated. Details of the recent U.S. Army and U.S. Marines evaluation tests (including vibration, heat and shock tests) of SS-11, Entac and Cobra are not available. The SS-10 is waterproofed and can operate in the temperatures range -35° to +50°C. The Bantam is intended for use in adverse terrain, thickly covered with snow at temperatures well below freezing. As Malkara did not meet their requirements for use in a tropical coun-

try, the Australians have turned down their own home-made weapon. This underlines the stringency of operational requirements.

A good shelf-life and dependability (i.e., repeatability of high performance with missiles quickly assembled from components available) are other important factors. Shelf-life depends among other things on the storage cell's life, which is hardly about six months. The Malkara is reported to feature easy interchangeability of major components, accessibility of internal components for repair/replacement and quick assembly by one man.

THE WEAPON SYSTEM

The missile being but one component of a weapon system, any discussion of the former should cover at least broadly the latter too. For the mobility and cost of a missile are largely determined by the weight, mobility and cost of the weapon system as a whole.

The transport box/container/launcher, fire control arrangement, connecting cables, binoculars/telescope, etc., are the major units of an anti-tank guided weapon system. The Cobra, SS-10 and Vigilant alone (between which there is much competition to fulfil infantry's need) are considered.

The Cobra, carried in a 8.8 lb. plastic foam container, requires no special launching ramp when fired from ground emplacements. The transport box of SS-10 weighs 55 lb. and can be used as the launcher. Otherwise, a 15 lb. launching ramp may be needed. The Vigilant is carried in a collapsible tubular launcher, weighing nearly 10 lb.

Cobra's control box (comprising a launching button, a joystick and a missile selector) weighs 5 lb. The soldier may carry it in a pocket sewn to his trouser leg or by a belt around his waist. The control unit can, if desired, launch and control 8 Cobras through a 3.3 lb. junction box. Thus the Cobra looks an attractive, integrated 'one man' weapon system.

Nord has recently revealed a lightweight 11.5 lb. Waist Belt Fire Control System for use with the SS-10 and SS-11. This equipment, thanks to transistorization, replaces about 80 lb. of control equipment formerly required for dependable missile firings. The major components of the system are the electronic generator, battery pack, joystick unit and control box. A pre-firing check-out system is integrated into the control unit. Nord has also reportedly developed several separate module concepts with which several different SS models can be integrated in one missile battery.

Though details are not available, the Vigilant weapon system is also reported to be competitive in weight and cost. The Vigilant weapon system does not require any control box, test equipment or anything other than the missile, launcher (carry box), guidance wire, cable drum and sight/controller, totalling only 45 lb.

PERSONNEL PROBLEM

The operator remains the vital component in the weapon system. Like a rifleman, the gunner must possess a quick eye and a steady hand. The selection of men with the required minimum standards of eyesight (20/20), hand-eye co-ordination and emotional stability is in itself a trying task. Emphasis is naturally on hand-eye co-ordination, varied manipulation tests being held to evaluate a candidate's handsteadiness. Nord employs an 'aptitude tester' for this purpose.

The training course consists of 'introduction to the missile, crew drill, marksmanship training, technique of fire and tactical training'. The average period of training, prescribed by Nord Aviation, is four 40-hour weeks. With a view to reducing training time and costs, 'simulators' are used during training. It is reported that about 10 per cent of the pupils are rejected during the simulator phase. The gunner fires on an average 13 SS-10s while qualifying. The accuracy of trained marksmen is said to be about 80—90 per cent. A sophisticated field unit, the Cinetir, is used for advanced gunnery training. Besides, even after the full period of training, to maintain proficiency the gunner continues his daily exercise on the 'simulator' and 'cinetir'.

While gunner training looks so tedious in the case of the French missiles, just 10 training hours on a home made portable, visual simulator are reported to be sufficient to obtain adequate accuracy in firing the German Cobra. But no gunner can obviously get into the thick of a battle without actual experience of several live launchings.

Five hours on the simulator and 2 to 5 live firings of the Vigilant are considered adequate to train an operator. Two to three live firings per year are prescribed to keep him at standard. This schedule looks cheaper than the French programme.

Current estimates suggest that it may cost £10,000 or more per man per year to keep operators on the top line. [The 12 rounds of 106 mm HEAT (High Explosive Anti-Tank) ammunition used for gunner qualification costs only \$340.] Use of computers to help the operator and other technological improvements may be desirable. The guidance signals for the Python, the most recent to have been placed on market, are 'shaped' in the ground control unit prior to injection into the wire. The adoption of velocity-type control, with which the human mind can deal more naturally, has already rendered training simpler. It is even said that with the adoption of velocity control as in the Vigilant, the cost of training operators may be reduced by a factor of not less than four compared with acceleration-type systems. Recoverable versions may, in the long run, contribute to a reduction in the cost of training. Contraves-Oerlikon, the Swiss manufacturers of the Mosquito, offer parachute recoverable rounds for training. But it is found that, as things stand today, the recovered missile may require an expenditure almost equal to its first cost.

WEAPON ECONOMICS

Of considerable interest to a military economist is the question of development, production and market costs of guided missiles. Broadly speaking, the ATGMs are the cheapest among the different species of guided missiles.

The SS-10 armed round costs about \$1,000. The training round, fully packed in shock-proof crate, costs about \$55 less. (The earlier quotations were SS-10: \$750; and SS-11: \$1,150.) This incidentally indicate that to deliver a 55 payload a \$1,000 missile is expended. Such a risk inherent in guided missiles is counter-balanced by the assurance of a high probability of crippling hits. The more refined and accurate the method of delivery, perhaps the more expensive becomes the means. For a comparison, it may be added that the 106 mm rifle, which fires the HEAT ammunition costing as much as the SS-10 warhead, costs about \$3,600 and can deliver "salvos" of many rounds.

The Cobra is quoted around \$1,000 and the Mosquito at \$900 per bird. Though the Vigilant's cost is given as \$1,350, it is claimed that the produc-

tion cost will be about \$900 only per round. The obvious trend is that the infantry weapons will be priced at \$1,000 to \$900 per round.

The SS-11 may cost $1\frac{1}{2}$ times the SS-10, in which case its price would be comparable to that of the atomic mortar "Davy Crockett". The heavy Malkara is tagged at about \$7,500. Incidentally, this figure almost equals the cost of the 800 lb. U.S. Little John, a 10-15 mile range unguided artillery weapon on a mobile, self-propelled launcher.

Data regarding the costs of other components of the Anti-tank Guided Weapon Systems is scant. However, the cost of the field set (launcher, cables, control unit, etc.), employed with the French SS-10, is given as \$5,000. (It is not known whether this figure includes the latest development, the Waist Belt Fire Control System). The French Simulator costs \$8,000 and the Cinetir about \$62,000. The Simulator developed for use with the German Cobra is reported to cost less. In the absence of a detailed breakdown of costs (including the training costs), it is difficult to go into the economic merits of the competing weapon systems.

OTHER REQUIREMENTS

It would be useful to know also how much is needed in time and money to develop these missiles. Development of Malkara began in 1951 and the amount spent is \$14 million. Within 4 years, it has cost Vickers \$3 million to develop the Vigilant. (This figure does not include the amount spent by ICI in developing the rocket motor.) Vickers undertook the Vigilant project only in mid-1956 and hence had the advantage of learning from the experience of other manufacturers like Nord Aviation, who started work on SS-10 as early as in 1945. Details of investments made in developing SS-10 and SS-11 are not known; however, the SS-11 development has been partially financed by the USA under the MWDP (probably Mutual Weapons Development Programme). While designing the Cobra, which is modelled on the Swiss Mosquito, the German firm Bolkow had the benefit of the experience of Con-traves-Oerlikon and the backing of a good chemical industry.

It may also be stated here that though skilled labour is considerably cheap in Japan, MAT, the Japanese version of the SS-10, is expected to cost more than the latter, since Japan lacks the facilities for the cheap manufacture of delicate components like gyroscopes.

Therefore, it is clear that in the development of a reliable and cheap guided weapon system, much depends on a country's industrial potential, especially on the strength of her aircraft, chemical, electronics, precision tools and engineering industries.

TACTICAL POTENTIAL

The ultimate aim of any analysis of a weapon system is to assess its tactical potential. Some aspects (merits and inadequacies) of the tactical potential of the ATGMs are here considered:

(i) **Minimum range:** Because of the 'minimum range' characteristic close-in anti-tank protection is hard to achieve with these missiles. But it is a happy trend that in the recent Larkhill firings (U.K.) of the Vigilant it has been possible to achieve up to 50 per cent strikes at 180 yards, closest reached so far with any ATGM. The gap in close-in anti-tank defence may be closed by suitable positioning, laterally and in depth, of the firing squads, so that one squad's

dead-space is another's zone of action. Anyhow, for short-range protection, recoilless guns like the new 35 lb., 90 mm U.S. infantry weapon MAW (Medium Assault Weapon) may be employed to complement the missiles. The recently revealed U.S. Army XM72 light anti-tank weapon (5 lb.) will fulfil the last ditch role.

(ii) **Rate of fire:** A low rate of fire is a limitation while engaging surprise or fleeting targets. Hence for effective fire, the actual practice in engaging moving targets seems to be to use the SS-10s in pairs. Missiles like SS-10 and Cobra are under power for a long period (20 seconds) over a short range (one mile). Though this means a sufficiently long period of controlled manoeuvrability under propulsion, the rate of fire will be just three rounds per minute, much in contrast to the rapidity of fire of the 106 mm rifle or 90 mm tank gun.

Besides, it may take up to 15 minutes to set up and fire from a ground position missiles like the SS-10. It is claimed that an experienced operator can assemble the warhead and body of Cobra and get into a firing position in about two minutes. This marks a considerable improvement.

(iii) **Deployment:** The number of missiles available to a gunner in combat is also limited because of their weight, size and bulkiness. In ground combat, usually batteries of six SS-10s are deployed, each battery being fired by a two-man team. A 4-ton truck mounts only three SS-10s. A jeep mounts eight Entacs and can tow a trailer with three missiles. Mosquitos are mounted in rows of five on cross-country vehicles.

Reduction in size and weight, as achieved with Vigilant and Cobra, through miniaturization of components, may enable more missiles to be accommodated on vehicles. Nevertheless, the ATGM and its associated equipment do not weigh as much as the 90 mm tank gun or the 106 mm rifle. They are readily air-transportable. Vigilants have been used under simulated combat conditions with airborne parachute troops. A Viscount could carry at least 60 operators with two rounds of Vigilant each.

(iv) **Air-to-ground role:** An important consideration is that missiles like the SS-10 and SS-11 can arm respectively fast helicopters and lightweight fixed-wing aircraft and be launched against earthbound tanks. The 'Alouette' helicopter can carry six SS-10s. During the Algerian insurrection, the French are reported to have fired the SS-10 with considerable success from French helicopters. The Bell H-13 can carry four and the new Bell HU-1A from four to six SS-10s. The SS-11s are being tried on the fixed-wing British Twin Pioneers and Scottish Aviation Pioneers. The French are installing the SS-11s on Dassault Flamant and the Vought Corsairs. The SS-12 also can be tried in the air-to-surface role. The Japanese MAT is to arm the H-13 helicopter.

The results of the US evaluation tests of the ATGMs like SS-10 and SS-11 in their air-to-ground role are not known. However, certain observations may be made. The number of missiles that can be airlifted is obviously limited. Because of wire-strength limitations, the speed of the launching aircraft will be limited to 200 to 250 mph. The maximum speed of the missile-launching helicopters may be only 100 mph. The height at which they can fly will at the most be a few thousand feet. The low-flying, slow-speed aerial platforms will be vulnerable to fire by enemy forward troops. The helicopters can perhaps be incapacitated even by small-arms fire. Besides, the helicopters cost nearly as much as the tanks, i.e. 1/4 to 1/3 of a million dollars. (The British Centurion tank costs \$399,000; while the helicopters cost: HU-1A, \$280,000; Sikorsky S-62, \$260,000; and Russian Mi-4 \$150,000).

(v) **Naval role:** The other mobile platforms contemplated for these missiles include naval vessels. It is said that SS-10 and SS-11 can be fired at sea-targets from land sites and from vessels under way. SS-11 can be fitted to torpedo boats. A naval version, in which measures have been taken to reduce loss of signal between the wires after they touch the sea, is under development with Nord. Sweden plans deployment of SS-11 on patrol ships. Denmark has bought the SS-11 for its Navy. NATO countries, most of which have long coastlines, are stated to be interested in the SS-11 as an anti-invasion weapon because it is much easier to deploy and hide than guns of equivalent crippling capacity. Malkara also can be mounted on motor torpedo boats and landing ships. It may be noted that the purpose of the Cobra evaluation by U.S. Marines is to determine whether the weapon can be used by fast-moving ground combat troops and by helicopters in amphibious operations. It is claimed that Cobra can be fired over water without shorting out controls. The container of the Cobra can be lashed to two others and a raft capable of floating a gunner to a good firing site can be made. The evaluation reports are not available.

(vi) **Cavalry role:** The ATGMS like SS-11, Python, Malkara and SS-12 are to be fired from vehicles. It is felt that for optimum effect the short-range guided missiles need to be integrated into mobile weapon systems. This calls for highly mobile launching platforms such as suitably designed combat vehicles. The versatile SS-11 can be mounted on tanks. Three Pythons can be fitted to a motorcycle like the FN (Belgium) AS-243 combat vehicle. The huge Malkara can be deployed on light and heavy vehicles and specially on airportable scout-cars. Four Tigercats can be carried on a single light-tracked chassis.

It may be pointed out that the anti-tank gun, particularly the tank mounted gun, is heavy, cumbersome and expensive. The gun as well as the recoilless rifle fires just on a straight line and hence can neither follow the evasive movements of enemy tanks nor reach as far forward as may be necessary. Furthermore, the flash or backblast renders such weapons readily detectable. Enemy forward troops can easily put them out of action. But the 'cavalry' type ATGM promises a reduction in weight, greater mobility, a better chance of protection and enhanced accuracy.

Not much is known about the performance of the cavalry weapons. However, the relative vulnerability of the different types of launching vehicles to enemy fire, their mobility and hence the nature of the terrain over which they can move and through which the winged tank-busters can fly are some points for consideration.

(vii) **Terrain:** If a terrain permits tanks to be there, it may also permit missile armed men and vehicles loaded with ATGMs to move across. But a broad and clear fire avenue is essential to the success of the visually observed and wire-directed ATGM. A missile like SS-10, designed for utilization in the table top smooth terrain of the French plains, can neither profitably nor safely be employed in city fighting, or in wooded regions covered with heavy jungle foliage. The larger the missile, greater its inability to fly through vegetation. It is a moot point whether the present-day ATGMs can be effectively employed in sandy desert soils where dust storms are frequent and on foggy days in snow-littered territory. It may be mentioned that in the recent Alpine tests with the SS-11 and its new Waist Belt Fire Control system, the actual launchings are reported to have taken place at a site 8,692 ft. high. The lowest target was at 5,904 ft. and the highest at 9,348 ft.

(viii) **Night-fighting:** Night-fighting potential is another aspect for consideration. For, modern tanks equipped with infra-red searchlights (e.g., the

joint development by the U.S. and the U.K. of an infra-red Xenon lamp, which may provide 'cat's eye' to armour has recently been announced) may rain fire through the nights. Is it possible to use during the nights also the visually-guided ATGMs to silence to death enemy tanks? It is stated that SS-10 can be fired effectively at night, provided the target is lighted by illuminating shell (say 81 mm mortar) or by the 18 inch or 60 inch searchlights. The observer would follow the tail-flare of the rocket and guide it to its prey.

Missiles like SS-12, provided with radar guidance, may be more effective in night fighting. But there is the nuisance of electronic countermeasures.

(ix) **Gunner Skill:** Gunner skill is difficult and expensive to acquire and retain. Combat's costly toll will defeat the agile fingers of even the adroit gunner. The element of fear, with mortar and artillery fire cracking around the launching area, may deter the gunner from keeping a missile in its 20 seconds course to the target. Each such erratic flight means not only a \$1,000 worth of missing missile but also a percentage of success lesser than the 80-90 per cent now claimed on the basis of evaluation trials.

(x) **Logistics:** As in the case of artillery guns and rifles, the personnel and material requirements of guided missiles are not easy to establish. For a missile is something like a gun and its ammunition rolled into one. Apparently one man can, during a given interval of time, launch and even control a salvo of missiles. But the actual number that can be fired by a gunner depends on the quantum of missile supply from ordnance units, the limited missile carrying capacity of the soldier and other tactical considerations.

Missiles like Bantam and Cobra are considered one-man weapons. The larger weapons may require a team of at least 2 men. During the Alpine tests, when five SS-11s were tested, eleven men were needed. The Entac requires a two-man crew, a command post supervisor and an optical tracker. Since the operator's position, hardly 50 yards from the launcher, is considered hazardous, an arrangement as in the case of U.S. Lacrosse* where a missile may be passed on from one controller to another is favoured.

It is generally held that the ATGMs have the disadvantage of increased personnel requirements. A platoon of eight jeep-mounted launchers for SS-10, the minimum support for a battalion would, it is stated, need about 50 men and 24 to 30 vehicles, depending on the number of sections. Additional personnel for maintenance, repairs, etc., would be needed at the direct support ordnance unit. Little else is known regarding the personnel and material requirements of ATGM units.

EVALUATION

The choice between the competing ATGMs is not automatic. The cavalry weapons are still being evolved. Python and SS-12 are yet to be evaluated. The heavy Malkara may be preferred by some for a general bombardment role against hard-skinned targets. So far, Britain alone has evinced interest in Malkara. Judged by the performance and popularity of the SS-11 in about a dozen user countries (Britain alone has been 'cool' to the Nord weapons), the versatile Nord bird looks the best bet.

More details (but not complete) are, however, available regarding the infantry weapons. Bantam is the lightest, with a small warhead; but it may be

* A 12-mile range ground-to-ground radio-command guided missile.

effective against light armour only. SS-10 and Entac are from a common conception and are very much similar; so are Mosquito and Cobra. Besides, whereas SS-10 and Cobra have caught the eye of users, Entac and Mosquito are yet to be produced in large numbers. Thus SS-10, Cobra and Vigilant remain the "top-seeds".

SS-10 is heavier, larger and slower and involves a costly and complex training programme. But it is the only missile to have been used in anger. (Israeli forces used with some success the French weapons against Russian-built Egyptian armour during the Sinai campaign in 1956.) Nord is the most experienced manufacturer and has good production facilities. Every month about 1,000 SS-10s and 1,800 SS-11s roll out of their factories. The number of SS-10s and SS-11s delivered to customers runs to tens of thousands. The SS-10 is now organic to French Army units. In the motorized infantry division, it is combined with '4-ton truck mounted' 105 mm recoilless rifles in the two anti-tank platoons of the heavy weapons company. The SS-10, along with machine-guns, is found in the anti-tank platoons of the light mechanised division. Nevertheless, the SS-10 design has been frozen for eight years now and can obviously be improved upon. In fact, Nord is working out, under the nomenclature 'ACAM', a more refined lightweight replacement for the SS-10.

Cobra is the lightest among the three and the weapon system as a whole looks simple and light. The training schedule is less elaborate. But it also flies slow, has an appreciable 'wing span' and an extended minimum range (not less than 500 yards). The U.S. Marines are currently evaluating the Cobra. The Germans, though they prefer the SS-11 for deployment exclusively on vehicles, still favour the Cobra for the infantry role.

Vigilant is nearer to SS-10 in weight, but nearer to Cobra in size. It has the smallest 'wing span', the simpler 'velocity control' like Cobra and the shortest 'minimum range', and is the fastest among the three. It has a larger warhead and perhaps greater kill power. The training programme is perhaps less expensive. Its maximum range is comparatively less—just short of a mile. As a weapon system it may not be much heavier than Cobra, but is lighter than SS-10. Only recently the British Army has ordered some Vigilants for evaluation.

It may once again be emphasized that the choice should be from the 'weapon systems' and not from the missiles and it will be conditioned by factors such as the all-up weight, mobility, economics of training and use, tactical potential, etc., of the weapon system as a whole. The race is still open. U.S. firms have manufacturing licences for the production of SS-10, SS-11, Vigilant, Cobra and Mosquito. Obviously, the best among the entries has not yet been picked up.

Strangely enough, very little is known about comparative anti-tank weapon development work in Russia. From the spectacular space firsts achieved by Russia, it may be inferred that the Russians are far ahead of the Western nations in guided missile work. If Russia can fire a Venus rocket from a Sputnik (an astonishing feat with no parallel), the development of an accurate anti-tank guided missile may be no strain on the imagination of the ingenious Russians. They can also rely on hordes of heavy armour, the fear of facing which has been the main force behind ATGM development work undertaken by the Western nations.

MERITS AND DEMERITS

To sum up, no ATGM, currently known, exhibits a combination of requirements like (i) light weight, (ii) small size; (iii) simplicity in manufacture, handling and operation; (iv) ruggedness; (v) adequate penetration and a large destructive potential; (vi) high accuracy; (vii) total absence of a 'minimum range'; (viii) high speed, yet good manoeuvrability; (ix) immunity to counter-measures; and (x) easy training of operators. Some feel that even a missile small enough to be carried and fired by one man, rugged enough to stand up to infantry conditions and explosive enough to knock out a heavy tank from a distance, of over a mile is perhaps yet to be evolved. It is also felt that the present generation of ATGMs has little to offer by way of reduced costs and complexity.

However, it cannot be denied that the ATGM has merits like superior range, low recoil forces, increased accuracy against moving targets and an ideal hollow charge warhead. In such respects the ATGM represents an improvement over the gun or recoilless rifle. For example, the Bantam weights just as much as the German Panzerfaust 60 (a recoilless grenade discharger), has the same kill power and can reach nearly 20 times as far as the latter (maximum range: 90 yards). The infantry ATGM thus meets the need for a light remote-controlled rocket to combat tanks from greater distances (up to one mile). It has a positive role at least as a complementary weapon to the conventional short-range weapons.

ATGM AND MILITARY THINKING

The impact of the evolution of the ATGMs on military thinking is not explicit. French strategists believe that the birth of the ATGMs means the end of the heavy tanks. The latter are no more being developed in France. Accordingly, the French have high stakes in their infantry weapon SS-10 and the light 'cavalry' weapon SS-11.

Britain and Germany seem to think otherwise and are going ahead with the development of new battle tanks (light and mobile but adequately protected) whose value as a source of medium range, mobile fire-power cannot be questioned. In fulfilling such a role, tanks have usually sought protection from heavily armoured 'tank killer' tanks equipped with powerful, long-range guns. The provisioning of heavy armour and large calibre guns has been rendering the tanks less and less mobile. But the advent of the ATGMs opens the possibility of light, highly mobile armoured vehicles which can attack the most heavily armoured hostile tanks. This perhaps explains the British policy of favouring large vehicle-borne missiles like Malkara and Germany's order for the French SS-11.

Changes in tank design (a lower silhouette, sloping fronts, proposals for the provision of spaced plating* so held in front of the main armour as to minimise the effects of hollow charge penetration, etc.) also seem to reflect the awareness on the part of military planners of the dawn of the missile era in anti-tank warfare.

* The Germans used such a protective measure in World War II.

Table I

ANTI-TANK MISSILES

	Launch wt (lb)	Warhead		Dimensions			Range limits (Ft)	Speed (m.p.h.)
		Weight (lb)	As % of total wt.	Length (in)	Body Diameter (in)	Span (in)		
TAM	13.2	3.1	23.48	30	3.9	15.8	1,000 — 6,500	190
QUITO	25	7.5	30.00	41.3	4.7	23.6	1,500 — 5,500	190
RA	20.9	5.5 (8.8)	26.31	42	3.9	19	1,640 — 5,250	190
LANT	31	12 (to 5)	38.71	42	4.5	11	500 — 4,500	340
AC	33	H (9)	33.33	33.9	6.5	29.5	990 — 5,250	180
AC	26.5	—	—	32.6	—	15	— 5,800	190
AC	64	17.5 (13)	27.34	46	6.5	19.7	1,650 — 11,500	425
PyV (Python)	80	30	37.5	60	6	24	—	—
KARA	206	60	29.12	76	8	31	500 — 6,000 +	400
AC	150(200)	—	—	72	—	—	7,000 +	—

Manufacturer		Missile cost	Associated equipment weight in lbs.			Remarks
Country	Concern		Control unit	Launcher	Container	
ANTAM	Sweden	Bofors	4.3	—	6.6	The container serves as the launcher.
OBRA	Germany	Bolkow-Entwicklungen	5	—	8.8	Needs no special launcher; junction box—3.3 lbs. Total cable wt: 12 to 30 lbs.
NTAC	France	French Army	—	11	26.5	—
OSQUITO	Switzerland	Contraves Oerlikon	—	—	—	No special launcher. Uses 66 ft. of coaxial cable.
S-10	France	Nord Aviation	11.5	15.4	55 *	* Transport box can also be used as the launcher.
S-11	France	Nord Aviation		20	77 *	
IGILANT	Britain	Vickers Armstrong	—	45	— with missile	75 yds. cable used.
ETHON	Britain	Pye	20 (28 with power unit)	—	—	—
ALKARA	Australia	Government Aircraft Factories	—	—	—	—

DOMESTIC SCENE

By OBSERVER

THE quarter under review began with some concern over the Prime Minister's health. For the first time in his life Mr. Nehru fell ill for a few days, obviously as a result of the strenuous electioneering campaign he undertook. Unused to such forced rest, the Prime Minister expressed his irritation at being kept away from normal work. The nation was happy when he quickly recovered after a brief holiday. The spell of illness made the people aware as never before of the heavy burdens Mr. Nehru carries on their behalf and of the need for others to share them at least to some extent.

We reported in the last issue on the elections to the Lok Sabha and the State Assemblies in the world's largest democratic vote. The occasion of commencement of work by the third Lok Sabha seems the appropriate time for a brief review of the second Lok Sabha. The first one elected in 1952 was critically referred to by some as a "rubber stamp" House. It was perhaps inevitable in the early years of the Republic. The Congress Party had a very big majority, and it had also a heavy basic programme to put through. With the emergence of the second Lok Sabha, however, the position changed. The Government faced a much more critical House. In fact, gradually over the ten years covering the duration of the first two Lok Sabhas, rule by parliament came to be accepted as an axiom of Indian politics. Even extremist elements who did not originally believe in parliamentary democracy slowly came round during this period, and this was of course the result of the success achieved. Particularly between 1957 and 1962 the Opposition began to command more and more respect from the Government. Political maturity developed, and the House began to have a definite role and say in all major decisions. The authentic voice of the people, represented not only by the majority party but by the smaller parties as well, began to assert itself in deciding the nation's destinies. This also proved to be a great advantage to the persons wielding power, because it ensured that their actions and plans secured wider support and were modified to suit various requirements wherever possible. A British student of politics and parliamentary institutions has been credited with observing after seeing the Indian Parliament at work that parliamentary institutions were more firmly established in the way of life of the Indian people than in that of many countries in Europe. In fact, the first ten years of parliamentary history after the Republic came into existence proved the correctness of India's choice of the parliamentary system in preference to any other. The makers of the Constitution were fully vindicated by the functioning not only of Parliament but also of the State Legislatures.

It is also to be noted that unlike older parliaments elsewhere in the world, India's Parliament had the specific duty of translating political freedom gained at such great cost into economic terms; this was in addition to its traditional role as guardian of democratic rights and as the instrument of popular control over the Government. One heartening feature has been that although the Opposition constituted only one-fifth of the total strength of the House, in debates and discussions Opposition members were given as much time as those from the Treasury benches. There was less and less of steam-rolling and more and more recognition of the useful function of the Opposition as an instrument of correction. The only occasion when there was

serious criticism of "steam roller" majority being used was at the time of the dismissal of the Communist Ministry in Kerala. Another significant fact is that a considerable proportion of criticism of Government's policies and actions in various spheres came from the Congress benches themselves. The contribution made by the members during the many debates on the five-year Plans was considerable—the best contribution came in respect of the Third Plan which is now in force. Foreign policy and the Chinese aggression on our northern border dominated discussions in every session particularly from 1959 onward.

The second Lok Sabha cost the Exchequer Rs. 45 lakhs per year. But this is a very small price to pay for all the advantages of democracy.

The first thing one notices about the third Lok Sabha is the absence of some top-ranking leaders who enlivened debate in the earlier Houses. Among these were Communist leader S.A. Dange, Praja Socialist leader Asoka Mehta and Acharya J. B. Kripalani. Apart from the significance of the defeat of these persons at the poll, there is no doubt that their absence has made the House a little poorer.

But this has been partly made up by the liveliness provided by the greater number of women in the new Sabha. In the old one there were only 27; the new House has 34. Among these are three Maharanis and two lesser Ranis, a couple of lawyers, a professor, and many representatives of tribal communities.

NEW CABINET

Quite early in April the Prime Minister announced his new Cabinet from the sick bed. Among Press comments at the time were: "The mixture as before", "old wine in old bottles" and "rightward shift". Mr. Morarji Desai continued as Finance Minister, setting at rest the considerable speculation regarding that particular portfolio. Mr. Jagjivan Ram, who ranks next to the Prime Minister in length of service in the Cabinet and has handled Labour, Railways and Communications, also continues. Others Cabinet Ministers are Mr. Gulzarilal Nanda, Minister for Planning and Labour; Mr. Lal Bahadur Shastri, Home Affairs; Sardar Swaran Singh, Railways; Mr. K. C. Reddy, Commerce and Industry; Mr. V. K. Krishna Menon, Defence; Mr. S. K. Patil; Hafiz Mohammed Ibrahim; Mr. Asoke Sen, Law; Mr. Keshav Dev Malaviya, Oil; Mr. B. Gopala Reddy, Information and Broadcasting; Mr. C. Subramaniam, Steel and Heavy Industries; Dr. K. L. Shrimali, Education; Mr. Humayun Kabir; Mr. Satya Narayan Sinha, Parliamentary Affairs. These were the Cabinet Ministers. Later on Mr. T. T. Krishnamachari came into the Cabinet as Minister Without Portfolio. The Ministers of State were Mr. Mehr Chand Khanna, Mr. Nityanand Kanungo, Mr. Raj Bahadur, Mr. S. K. Dey, Dr. Susheela Nayar, Mr. O. V. Alagesan and Mr. Ram Subhag Singh. There was some hitch over Mr. Manubhai Shah, who was sworn in a little later. Of the Cabinet Ministers, Mr. Krishnamachari returns after a break which followed his resignation on the heels of the Mundhra affair; Mr. Subramaniam is new, having been Finance Minister of Madras for several years; Mr. Malaviya and Mr. Kabir were promoted.

With the first meeting of the new Lok Sabha departed from the scene of parliamentary activity a popular figure who was held in much respect—Speaker Anantasayanam Ayyangar. He had become so much part of India's Parliament that it must have been a wrench to him to have to go away as Governor of a State. High tribute was paid to him by the Prime Minister and others who referred to his consistent impartiality and the high traditions he had set up.

Sardar Hukam Singh was elected Speaker of the House in place of Mr. Ananta-sayanam Ayyangar.

NEW PRESIDENT

But the bigger wrench was to follow. Dr. Rajendra Prasad's 12-year term as President of India drew to a close and there was much sadness all over the country at having to lose the services at the helm of affairs of so wise and good a person. Dr. S. Radhakrishnan had been elected new President. The changeover took place on May 13. Dr. Rajendra Prasad's departure from Rashtrapati Bhavan had one big significance. Gandhiji had entrusted the nation's affairs to four persons, chief of them being of course Nehru. The other three were Maulana Azad, Sardar Patel and Dr. Rajendra Prasad. Thus from May 13 onwards, of the quadrumvirate only the Prime Minister is left. The twelve years Rajen Babu was Head of the State were years of tremendous progress for the country. As the nation bade farewell to the retiring President, his great and valuable services both during the freedom struggle at Gandhiji's side and in free India as Mr. Nehru's friend and adviser were gratefully remembered.

India is indeed fortunate in possessing a philosopher-statesman who is a worthy successor to Rajen Babu. He had been Vice-President for many years, and in these years did much to enhance India's reputation abroad and to bring about unity and cohesion inside the country. Dr. Radhakrishnan headed the Indian delegation to the UNESCO in 1946 and was elected its Vice-Chairman two years later. He became Chairman of the University Education Commission, whose report continues to be the best blueprint for higher education in this country. For three years from 1949 he was India's Ambassador in Moscow—an assignment which at that time was considered the most difficult to handle. His contribution to the building up of Indo-Soviet relations during this period was valuable. Stalin gave him audience twice—a unique privilege which caused considerable surprise all over the world. As a well-known philosopher recognized as the interpreter of India to the world, he represents the cultural synthesis of India and our country's earnest desire for peace on earth and goodwill among men, so that humanity may march hand in hand towards happiness.

VICE-PRESIDENT

The new Vice-President, Dr. Zakir Hussain, is more or less of the same type as the President. Dr. Hussain has been a humble servant of the people from the time he gave up his studies and joined Mahatma Gandhi's mighty, non-violent freedom army. He was, much later, Vice-Chancellor of Jamia Millia Islamia till 1948, when, on Maulana Azad's persuasion, he became Vice-Chancellor of Aligarh University. He served in various cultural and educational bodies, notably the Central Board of Secondary Education, the University Grants Commission, the University Education Commission, and the Press Commission. He was awarded Padma Vibhushan in 1954. He subsequently became Governor of Bihar which post he left on becoming Vice-President of India.

TAX PROPOSALS

Union Finance Minister Morarji Desai presented his Budget proposals to Parliament in the early part of the quarter under review, and the debate went on well into May before they were finally adopted. The most important feature was the introduction of new taxation measures that will bring to the Exchequer over Rs. 70 crores. This, the House was told, would reduce the

overall revenue deficit to Rs. 89 crores. The Finance Minister was not unduly gloomy: "With increased incomes and production and with a tighter check on tax evasion, our taxes will bring in more than we are able to foresee at present." Of the increased revenue, Rs. 44.5 crores will come from indirect taxes. The Minister justified the levies on the ground that the commodities being taxed were such that the burden would not fall on the poorer sections of the people. Among the commodities on which excise duties were increased were tobacco and cigarettes, cloth, yarn and matches. In the list of direct taxes the most impressive is the increase in Corporation taxes. Mr. Desai said: "The State will now get half the profits of joint stock companies as against 45 per cent in the recent past." Surcharge on income-tax on salaries and pensions was reduced from five per cent to 2.5 per cent. The Expenditure Tax was scrapped.

Reaction to the Budget was varied. A typical comment was "*status quo* budget." Several members, including Opposition members, felt that stiff taxation measures were inevitable in the context of the heavy commitments involved in planning. One comment ran as follows: The big tax effort needed to raise Rs. 1,100 crores has been made in two strides by the Finance Minister; there is no major dose of inflation; enough incentive has provided for attracting equity capital at home and from abroad. Another comment was on these lines: The Railway budget and the general budget together have imposed a burden of Rs. 93 crores. The bulk of this will fall heavily on the common people and more particularly on the working people and the middle classes.

Mr. Desai, however, was able to persuade the critics that his proposals were the best possible under the circumstances and the House adopted them.

KING MAHENDRA'S VISIT

During the quarter there were many important visitors to New Delhi. The most important of these, from the point of view of political significance, was King Mahendra of Nepal. His visit, on the Prime Minister's invitation, had been looked forward to as a new and promising opportunity to improve the relations between the two countries which had got rather strained in recent times. The Nepal Government had made accusations against the Government of India of encouraging Nepalese politicians to work against the regime from Indian soil. This was refuted by the Government of India, but the charges nonetheless continued to be made. India's interest in Nepal is only that of a well-meaning neighbour; she has no interest in Nepal's internal affairs beyond a desire that disturbed conditions in that Himalayan kingdom should end and peaceful conditions should be speedily restored.

As King Mahendra arrived in the Indian Capital, many people wistfully remembered the very close and friendly relations that subsisted between the two countries as a result of the efforts and attitude of his father King Tribhuvan. In November 1950 King Tribhuvan, accompanied by the then Crown Prince Mahendra, came to Delhi as a friend and ally who had complete faith in the neighbouring country; eleven and a half years later King Mahendra Bir Bikram Shah Deva arrived in New Delhi for a "heart-to-heart talk" with Prime Minister Nehru to remove "mutual suspicion, doubts and distrust". In the event, however, the talks were not as completely successful as expected, although from the official communique it is evident that a new beginning has been made in the matter of restoring cordial relations.

Another important personality to visit New Delhi was Singapore Premier Lee Kuan Yew. Mr. Lee, who was on his way to Cairo, halted here to meet Prime Minister Nehru and explain to him the plan for Malaysia (merger of

Malaya, Singapore and North Borneo to form one nation). Mr. Lee declared after the talks that he was "fully satisfied", but Press correspondents felt that he had not satisfactorily explained how he expected to overcome the big opposition in Singapore to the plan drawn up for the purpose by Malaya's Premier Tengku Abdul Rahman. However, Mr. Lee seemed to be confident that the plan would be pushed through at an early date and the new South-East Asian State would come into being.

INDIA AND ECM

The visit of Mr. Duncan Sandys, British Commonwealth Relations Secretary, was of a different kind altogether. He came for talks regarding Britain's proposed entry into the European Common Market. This move naturally generated fears in the Commonwealth countries that their trade would be adversely affected and mere assurances that Commonwealth interests would be safeguarded were by no means satisfactory. Mr. Sandys was sent by Prime Minister Macmillan to assess opinion as well as to discuss with India's leaders possible solutions to the problem. India's fear mainly is that any such "closed shop" type of arrangement in trade and economic relations among a group of countries would adversely and severely affect her increasing trade as a result of increased efficiency and expansion of Indian industries. The one concrete achievement of the Sandys mission was an invitation to Finance Minister Morarji Desai to visit Europe and explain to the European Common Market powers India's misgivings and expectations. Shri Desai's visit appears to have done some good, although pessimism persists in the highest quarters on the final outcome of it all. The memorandum submitted by the Government of India earlier to the ECM Six asked for: (1) "zero tariffs"—that is, free entry for tea, spices, vegetable oils, coarse grey cloth, jute manufactures, etc., into the United Kingdom; (2) treatment in Britain to Indian goods similar to that extended to Tunisian exports in France; and (3) acknowledgment of the GATT principle that a customs union should not adopt a tariff more restrictive than one previously enforced by a member State. Nothing final had emerged either in regard to Britain's entry into the ECM or in respect of guarantees to India, Pakistan and other Commonwealth countries.

Mr. Sandys also discussed with the Government of India the latter's plan to purchase MIG aircraft from Russia. The possibility of Lightning aircraft being sold from Britain instead came up for discussion in this connection. Later on a team of experts was sent to Britain to inspect and report on the suitability of Lightnings for India's requirements.

ANTI-NUCLEAR ARMS MEET

A major event in the Capital towards the close of the quarter was the Anti-Nuclear Arms Convention organised by the Gandhi Peace Foundation. A large number of leaders from different parts of the world assembled at Vigyan Bhavan to discuss the threat to humanity posed by the nuclear armaments race and the testing and counter-testing of thermonuclear devices causing great and incalculable peril to the human race. The significance of the convention lay in the fact that India's leaders from every walk of life had set in motion a new international movement against nuclear madness. A sense of urgency was in the air, and the delegates felt that the most pressing task before them was to devise some concrete plan of action to meet the "clear and present" danger of the continuing tests by the Soviet Union and the United States. Former President of India Dr. Rajendra Prasad inaugurated the convention. Among those who participated in the deliberations were Shri Jaya-

prakash Narayan, Shri J. B. Kripalani, Mr. A. J. Muste of the United States, M. Abbe Pierre of France, Mr. Danilo Dolco of Italy, Rev. Fuji of Japan, Prime Minister Nehru, Dr. S. Radhakrishnan, Shri R. R. Diwakar, Shri C. Rajagopalachari, Kamal Jumblaat of the Lebanon, Igor I. Tamm of Russia.

The convention resolved to "encourage all who are conscientiously moved to do so, to launch and participate in such direct action against nuclear testing undertaken by any nation."

Among the practical steps decided on at the convention were the following:

1. To send a deputation of eminent persons to Moscow, Washington, London and Paris, and also to the United Nations and Geneva (where the International Disarmament Conference has been going on) to appeal to the heads of government of the nuclear powers to give up not only the testing of nuclear weapons but also their further production, and the destruction of all existing stocks of the same;

2. to suggest to all peace organisations in the world to launch a signature campaign for this purpose;

3. to appeal to all peace organisations to observe an anti-nuclear war vigil on a fixed day; and

4. to develop more intimate contacts with and promote effective cooperation between the various peace organisations in the world.

The convention did not expect spectacular results. The decisions followed a sober assessment of the prevailing international tensions. The delegates appeared fully aware that their path was a long and arduous one. But despite all this they did succeed in kindling the flame of hope for mankind's future.

BOOK REVIEWS

The Unwritten Alliance, Speeches 1953-59 by Winston S. Churchill (ed. Randolph S. Churchill). (Cassell, London, 1961). 332 pages. Price 35sh.

The title of this book is derived from Sir Winston's fervent plea for strengthening Anglo-American friendship. It has been actually taken from his words, uttered on the occasion of a dinner in honour of the Supreme Allied Commander of NATO. In that speech, Sir Winston referred to "the unwritten alliance which binds the British Commonwealth and Empire to the great Republic of the United States" (p. 153).

Like his celebrated predecessor, Edmund Burke, Winston Churchill proved to be a dynamic and awe-inspiring parliamentary orator. In fact, Churchill is more than a mere orator. His oratorical eloquence, combined with the genius of his leadership made it possible for Britain to emerge victorious in World War II. He it was who stiffened the back of the British lion, made it growl and lash its tail at a time when the rest of Europe collapsed under the armed might of Nazi Germany. The voice of Churchill has reverberated amidst the thunder-blasts of atomic explosions during post-war years, assuring an anxious and fear-ridden world that the policy of Britain is a determined policy of "Peace through Strength".

The collection of Sir Winston's speeches, brought together in this volume, may be grouped for the purpose of this review under five heads: Ceremonial Speeches, Speeches on problems internal to Britain, Political Speeches, Speeches on Military Affairs, and Speeches on International Situations. Churchill combined force of expression with clarity of thought in such a remarkable way that many of the things he has said leave an indelible impression on the mind of the reader.

Notable among his speeches on ceremonial occasions was what he said on the occasion of the coronation of Her Majesty Queen Elizabeth II. "Let it not be thought", declared Sir Winston, "that the age of chivalry belongs to the past. Here, at the summit of our world-wide community is a lady whom we respect because she is our Queen, and whom we love because she is herself" (p. 55). These were no mere words of flattery, for Churchill realized just as anyone else in Britain, that the Queen stands for a unity which must persist in times when "the present is hard, and the future veiled" (p. 55). On graver occasions, such as that occasioned by the death of Queen Mary, Churchill couched his sentiments in solemn tones, reminding his broadcast listeners that "Queen Mary will long live mellow and gracious in all our memories and in the annals of these tumultuous times" (p. 25). His challenging expressions often came out on ceremonial occasions with unparalleled force. Speaking at St. George's Day dinner in 1953, he said: In those bygone days I did try to see what would have happened if St. George had lived twenty years ago... He would be armed not with a lance, but with several flexible formulas. He would, of course, be welcomed by the local branch of the League of Nations Union—or I thought to alter that to be correct and say of the United Nations Union. He would propose a conference with the dragon—a Round Table Conference—no doubt it would be so much more convenient for the dragon's tail. He would make a trade agreement with the dragon. He would loan the dragon a lot of money... Finally, the dragon would be photographed with St. George" (p. 37). His unshakable conviction in the principle that unity is strength never failed to come to the forefront on many formal occasions.

Speaking at the Guildhall, London, he asserted that "with the world divided as it is at present, the freedom of our vast international association of the free peoples can only be founded upon strength, and strength can only be maintained by unity. The whole foundation of our existence stands on our alliance, friendship and increasing sense of brotherhood with the United States..." (p. 195).

Occasions of national emergency prompted Churchill to express the most lofty sentiments. In early 1953, a great storm swept over the North Sea Coasts of England, taking a heavy toll of tragedy and devastation. Sir Winston was quick to appreciate the seriousness of this national calamity. Reminding his listeners that this was a national issue, he told the Farmers' Union that there can be no question of choosing between food production and exports. "We here tonight are resolved to proclaim that the home grown food of Britain must with great urgency, be raised by 1956 to sixty per cent above what it was before the war" (p. 6). In much the same way, he realized that post-war Britain stood sorely in need of more houses. "We live in an anxious and uncertain world" said Churchill, "where all sorts of things may happen, but it is not easy to see how anything short of a world crash could deprive the building industry of a prolonged demand for its services and provide a constant flow of work in which steadily improving methods will carry with them steadily improving conditions" (p. 222). Sir Winston was equally emphatic regarding the necessity for compulsory National Service, which did not, in his opinion, admit of a change in policy (pp. 83-88).

Sir Winston apparently felt infused with extra vigour when it came to making speeches on political themes. He made no bones of the fact that he was out and out conservative, despite what his critics in Britain and outside thought of him. Addressing the Conservative Party at Margate (Oct. 1953), he reviewed the progress made since his party assumed power, and summed up the objectives in the following way: "We stand for the free and flexible working of the laws of supply and demand. We stand for compassion and aid for those who, whether through age, illness, or misfortune, cannot keep pace with the march of society. We stand for the restoration of buying and selling between individual importers and exporters in different countries instead of the clumsy bargainings of one state against another, biased by politics and national feelings as these must necessarily be" (p. 63). He felt sincerely convinced that not only he, but the British nation had no use for socialism. And so he told a mass meeting of Conservative women, assembled at the Royal Albert Hall, quite plainly that "the British people do not want Socialism. The less they have of it, the more they will be pleased. The more they have of it, the more will they be obstructed and annoyed..." (p. 148). It should not be forgotten that Churchill was speaking in the context of an economy which had suffered many reverses as a result of the extravagances of a socialist policy. In fact, Sir Winston was even more emphatic about this when he spoke to young Conservatives in 1955. "Who can doubt", he asserted, "that the country has chosen wisely between the two roads presented to it. Along one road lay the Socialist State, with all powerful officials deciding increasingly how everybody shall live, and spending more of what everybody earns. As the State counts for more, the individual man counts for less. On the other road, the Conservative road, the goal is a free life in which there is growing opportunity for the able and growing protection for the weak and unfortunate" (pp. 276 and 277).

Sir Winston Churchill was in his elements when he voiced his opinions on military topics. His attitude towards the role of the armed forces was ably sum-

med up when he spoke on Defence in March 1954. "We all know the old gibe about the War Office always preparing for the last war. It would also be a mistake, on the other hand, for the War Office to be preparing for the next war but one . . . Our armed forces have to guard us during what we hope will be long years of peace and minor bickerings, and to maintain continuously a deterrent against aggression" (p. 123). He had at his finger tips technical details pertaining to weapons and equipment, be it the Infantry rifle or the Hydrogen Bomb. In 1954, there was a vigorous debate in Parliament over the adoption of a new Army rifle. Sir Winston held his ground and summed up his views in the following way: "The British rifle was a fine piece of work, but it would have been fatal to adopt it in isolation, and in the three years that have passed the rival weapons have been continuously improved. We are very lucky to have escaped the isolated inheritance of the .280 calibre, and to be able to stand on a general front as well as on sound foundation" (p. 109). With regard to the Hydrogen Bomb, Sir Winston reiterated the two-fold aims underlying his policy. "One is to lose no opportunity of convincing the Soviet leaders and, if we can reach them, the Russian people, that the democracies of the West have no aggressive design on them. The other is to ensure that until that purpose has been achieved we have the strength necessary to deter any aggression by them and to ward it off if it should come" (p. 136).

Sir Winston's international outlook has been strongly influenced by his profound regard for the people of the United States, with whom, he is convinced, the British share a common fate. "Rochester was the home of my parents", he declared on the occasion of the conferment of a doctorate by New York University, "and my mother was born in Brooklyn . . ." (p. 137). A point which he never failed to emphasize was the great strength of the bond which binds English-speaking people. "The English-speaking world, united in itself, and supported by its allies, is an unconquerable force. It asks nothing more than that it should be allowed in safety and freedom to use its wealth, its genius, and its power for the furtherance of peace, progress for all" (p. 155). With regard to China's admission to the UN, he had his own considered opinion. "In principle, one cannot conceive that China would be for ever excluded from the United Nations, but on the other hand one really does not see why this particular moment would be well chosen for its admission when it is still technically at war with the United Nations . . . I certainly do not see anything in the conduct of China which has yet happened which should lead the American Government to deliver Formosa to Communist China" (pp. 169, 171). A stern realization of the present dangers confronting the free peoples of the world characterized Churchill's opinions regarding international relations. "The Soviet bloc confronts the West with an overwhelming superiority in guns, tanks, aircraft, submarines, and sheer weight of manpower. These standing forces are constantly being re-equipped with the most modern arms. As against this, Western defence has been based on the deterrent power of the nuclear bomb". Free Europe has thus been compelled to wake up to this fact and to join with the United States and the British Commonwealth to protect their freedom (p. 326).

The name of Churchill will live in the annals of Britain, for he has been honoured by the institution at the University of Cambridge, of a college named after him. Whether one agrees with the ideology of Sir Winston Churchill or not, the fact remains that this ideology, backed by the tenacity which has been so characteristic of him has been and will continue to be the bedrock of freedom in the world today.

The Triumph of Integrity: A Portrait of Charles de Gaulle by Duncan Grinnell-Milne. (The Bodley Head, London, 1961). 320 pages. Price 30sh.

With the background of a long and distinguished service as test pilot and air liaison officer in the Royal Air Force, Mr. Grinnell-Milne, who served during World War II as liaison officer at the French and British HQ till the fall of France, became air liaison officer under General de Gaulle. Subsequently, he worked for the BBC, carrying out propaganda broadcasts on behalf of the Air Ministry and the Admiralty. What he writes, therefore, is based on direct knowledge and experience of the hopes and fears which filled the minds of those who struggled to have a share in the Allied war effort, exiled as they were from their own countries. These men had often to face the hostility of their own countrymen who collaborated with the enemy, and at the same time to allay the suspicions of Allied countries regarding their good intentions. Regarding General de Gaulle, it can be said that he alone held high the banner of France during those critical days. "I am France" was his watchword—not a boast but a personal dedication of himself to his own country and its unfortunate people. Around this banner, the patriots of France rallied, and with him they marched on to victory.

Nevertheless, General de Gaulle is one of the most controversial figures today. At the present moment, he seems to be involved in an awkward controversy, arising presumably out of his desire to make Europe a third force between the two great power blocs, whereas the United States wishes Europe to be a strong and united power in the cold war. De Gaulle wants his own nuclear force. Kennedy wishes to keep nuclear weapons out of the hands of those who do not already have them. If this is the root cause of the present tangle, it would appear that de Gaulle is challenging American leadership as the policy-maker of the Western Alliance. In fine, he is involved in a simple clash of national interests. This cannot be described as a happy situation. How it is going to end, nobody really knows.

The story in the book, however, covers an earlier period of de Gaulle's rise to fame. The mind of the reader harks back to the 18th June, 1940, when clouds of darkness overshadowed France. The French Premier, M. Reynaud had been talking of miracles. General Weygaund had asked everyone to stand firm. Marshall Petain became the great leader of the moment. The intrigues of Laval and Darlan were allowed free play. By degrees it became evident that political leadership in France sought to play second fiddle to the German war machine. At this juncture de Gaulle came forward, appealing to all French fighting personnel to continue resistance. Setting up his headquarters in London, he built up the fighting strength of free France.

The early years were difficult for de Gaulle. Nearly every day a new crisis brewed. The Allies could take no risks. Action against the French warships at Oran was forced on the Allies. Dakar provided the story of yet another episode bristling with conflicting emotions. Step by step the effort of de Gaulle and his supporters gathered momentum, till the day of deliverance for France drew near. The German hold over France gave way when Allied forces landed on the beaches of Normandy. France came to her own again. Field-Marshal Montgomery has characterised President de Gaulle as the greatest political leader in the Western world—indispensable to France and to Europe. It is indeed unfortunate that today his policies have tended to give the impression that Britain, to whom he owed his survival during World War II, cannot co-exist with Gaullism. It is still a matter of speculation whether de Gaulle's ideas about

the coming shape of Europe and Europe's place in the world are sufficiently compatible with British ideas on these subjects for the two countries to live side by side in the same community. As against this, he perhaps feels compelled, merely in order to preserve good relations with the Federal Republic of Germany, to accept some degree of trust in the alliance with the United States.

It is no doubt tempting to speculate on the merits of de Gaulle as a military leader, as compared with his achievements as a statesman—whether his success in the former field of action will contribute to his effectiveness in the latter. The problem remains, however, that the several complications arising in connection with the European Common Market today are vastly different from the strategic issues posed by conditions prevailing during the war years.

WTVA

Gertrude Bell, *From her personal papers.* (Vol. II, 1914 to 1926) by Elizabeth Burgoyne. (Earnest Benn Ltd., London Burgoyne 1961). 399 pages. Price 45sh.

Miss Gertrude Bell achieved fame on account of her service in the Arab Intelligence Bureau, the creation of the independent state of Iraq, and the founding of the Baghdad Museum. Lawrence of Arabia, writing to her father, Sir Hugh Bell, shortly after her death in 1926, said this of her: "I do not think I ever met anyone more entirely civilized in the sense of her width of intellectual sympathy." Although the Iraq State—a fine monument which she had fashioned—has since fallen, one must needs hope that her other singlehanded creation will live on.

This book is a sequel to the first volume, which contains the personal papers of Miss Bell from 1889 to 1914. Our story begins at the stage in her life, when at the age of forty-six, she had completed her explorations of the Arabian desert and had gone through the harrowing experience of solitude and pain. Although she declared that she was "quite rested and much amused," there still were some traces of the stresses she had survived. In the meanwhile, World War I had broken out, and she was back at her desk in the Intelligence Bureau at Basrah.

There is a quaint reference to Miss Bell's visit to India on a political mission. She visited Delhi at the time when Lord Hardinge was Viceroy. She was duly impressed by his political sagacity, his breadth of understanding and his sympathies towards the people whom he governed, just as surely as she was intrigued by the "exquisite silk petticoats" of the Burman members of the Indian Legislative Assembly.

For many years, Miss Bell was the friend of Sir Percy and Lady Cox. Sir Percy was the Chief Political Officer in the Persian Gulf. On Sir Percy's retirement in 1923, Sir Henry Dobbs succeeded him, and was in charge when the Constituent Assembly met in 1924, to approve the treaty between Iraq and Great Britain, and to pass the law of the Constitution. In the quiet simplicity of her thinking, Miss Bell revealed a shrewd insight into the many problems that confronted the British of her day and generation. Here is what she wrote to her father, whilst serving at GHQ, Basrah: "Every sort of man and beast, and human contrivance is to be found there. British troops, Indian troops of every variety, buffalo carts, mules, tongas, motor cars and lorries of the latest pattern, camels, reed huts and telephone wires, and now and then a sudden conquest of the water and your parade ground of yesterday, a stretching lake of today. And behind it all is the problem what we are

going to make of the country and the people." Over and over again, one encounters in what she writes, that keen sense of justice and fairplay, so truly characteristic of the mind of the unbiassed British thinker. "We are up against far reaching Arabian problems, the Sharif Vs: Ibn Saud. I hope they will be settled wisely at home and fairly to both parties."

One of the great virtues of the British who lived in the middle and near East was their kindness towards their domestic servants, their regard for those who served them truly and well. Here is what Miss Bell wrote to her people at home: "The invaluable Tobila, my butler, is developing into a capital servant. He has a very small son whom I find sometimes toddling about in the garden. When I appear, he runs precociously down the garden path and kisses my head. He is most engaging. My gardener has got a son and heir, a fortnight old, born in the garden, but he is so closely wrapped in swaddling clothes that he looks more like a chrysalis than a baby. How do they survive, I wonder." Servants in their turn were truly devoted to their masters. One encounters this attitude even today in those venerable old men—grey-bearded men with flowing turbans—who speak with feeling about the days when they served people to whom they meant something, people for whom they were persons, not mere instruments. What they have to say about their present day masters had best remain untold.

Politicians and demagogues have often denounced the British, accusing them of duplicity, dishonesty of purpose and imperialistic designs over the declaration, made during World War I, stated in no unmixd terms. It contains the promise—a promise which has since been fulfilled many times over—"that indigenous populations should exercise the right of self-determination regarding the form of national government under which they should live." The immediate result of this declaration was much the same as what the British witnessed in other countries of the East, for decades after that time. Miss Bell's description of the ferment in the minds of Baghdadis might ring a bell in the mind of the Indian reader: "Public opinion is very jumpy, and the most unexpected things set the town afire with almost childish indignation. Every word we say they regard as pointing to things we have in our hearts, which we don't fully explain."

Miss Bell's description of life in Baghdad makes interesting reading. Her father's visit to Baghdad added to the joys of her life. Her sympathy for the ideas and aspirations of the people seeking self-government and self-determination was considerable. In this period, until constitutional government with ministers responsible to parliament took shape, she exerted her best influence and lived through some of the greatest moments of her life. It was, however, a sad reflection, true though it certainly is, which made Miss Bell write in the following strain. "It is surprising, when you come to think of it, that Europe should have found out that a reasonable minimum of virtue and honesty are essential concomitants of any successful society." What seemed to be lacking was that air of fine and simple dignity, that confidence in one's personal integrity and wisdom, which characterised personalities like Sir Percy Cox, whose life and example were a great inspiration to her. Indeed, she could speak with some authority on this matter, since she was conversant with the things she came across in a flood of intelligence reports. It is not surprising then, that, writing to her mother, she should have observed: "We sit here and have the very doubtful advantage of getting news of Asia from all quarters—all the secret reports from everywhere pass through our hands—and the impression left on one's mind is one of unmiti-

gated intrigue, turmoil and revolution." There is indeed no attempt to whitewash the stark facts of history.

The chapter describing Miss Bell's impressions of the historic Cairo Conference makes very interesting reading. At this conference, Britain agreed to support the candidature of Amir Faisal for the throne of Iraq. Here Churchill appeared in all his glory, most ready to meet everyone halfway. When Faisal was crowned King of Iraq in August 1921, Miss Bell wrote home, describing the colourful ceremony in which the flag of Iraq was broken to the strains of the British National Anthem. Her knowledge of the inside of things often prompted her to call attention to untoward developments. One such occasion was provided by the appointment of one of the worst scalliwags as treasurer of Faisal's household. Nevertheless, by degrees, the power and influence which the British had exercised over the government of Iraq gave way to the growing power of the indigenous ruler. What did however fill her mind with regret was the way things were being rushed. Writing to her parents, she remarked: "What is needed is several years of stability and decent government, not a miracle, but a reward earned by steady work." This is indeed reminiscent of the inscription put up by a British architect over one of the great archways of the Secretariat building, erected in 1931, when the new British capital was constructed in India.

The concluding chapters of the book tell of Miss Bell's efforts to establish the Baghdad Museum, which was the product of her last great constructive effort. In July 1925, she returned to England, in a condition of nervous fatigue and physical exhaustion. She appeared completely run out of bodily and mental energy. A few weeks of rest in her Yorkshire home made her feel herself once again. In barely three months, she was back in Baghdad, but once more she took ill, and had to be admitted to a Baghdad hospital, laid up this time with pleurisy. However, she soon recovered and resumed her efforts to build up the Baghdad Museum. Till July, 1926, she strove hard to keep up her good work. The end came suddenly, at the age of 58, one night early in July, when she went to sleep—never to wake up again.

As one reflects over the personality and character of Miss Gertrude Bell, one cannot fail to be struck by her sensitivity to what was worthy of respect in cultures other than her own, her keen sense of impartiality, and her burning love for the people of the East. She was not, however, blind to their faults, and the fact that she was frank enough to express her opinion ought not to be taken amiss. To the eyes of some readers, she might look like one of the stalwarts of British Imperialism. Nevertheless one often wonders whether it is not true, as General Romulo of the Philippines some time ago declared at Bandung, that the empires over which it used to be said that the sun never sets, are departing from this part of the globe, one by one. What we are now witnessing is the growth of those empires, over which, as we know, the sun never rises.

W.T.V.A.

Highly Explosive by John Frayn Turner. (George G. Harrap, London, 1961)
208 pages. Price 20sh.

When Shakespeare characterized the soldier as one who "seeks the bubble reputation in the Canon's mouth", he certainly did not envisage the tremendous risks which Major Bill Hartley took during eighteen years of service in the British Army, and which eventually earned for him the George

Medal, conferred on him in 1960. This decoration was merited by achievement which is anything but "bubble reputation". Hartley was commissioned in 1942. As head of the operational side of bomb disposal, he undertook some of the most daring exploits, with nothing to save him but his own wits, his presence of mind, and his indomitable courage.

Bomb disposal in Britain was a function of the Royal Engineers, from 1939 onwards. During the early years of World War II, Hitler's bomber force rained down all kinds of explosive and incendiary devices over Britain, some of which exploded, and a good many of which did not. The ones which did not explode proved to be a greater menace than the ones which did. UXB's as they were called for short, were of many varieties—some of them genuine dud bombs, some with delayed action fuses, booby traps, V.I's, V2's and scores of other potential killers—showered indiscriminately by the enemy air force as the war of attrition was waged with full vigour.

Some of these bombs lodged themselves in the strangest of places. It was really a matter of chance. In September 1940, a large bomb fell near St. Paul's Cathedral, London, burying itself 26 feet deep. It took a lot of effort for a bomb disposal squad to dig up the bomb and render it harmless. Some idea of the magnitude of the tasks of bomb disposal squads may be gained from the fact that in August 1940, as many as 2,500 UXB's had to be tackled within a period of forty-eight hours. The menace of UXB needed to be handled effectively for many years after the end of hostilities, and it fell to the lot of Major Bill Hartley to do this over and over again, right from the time of his posting to Bomb Disposal in 1942.

The first bomb which Hartley tackled and rendered harmless was a 250 Kg. high explosive with a clockwork fuze. This bomb had lodged itself in the yard of a hotel in Southampton. The clock had stopped, but was quite capable of starting again. Hartley got to work on this promptly, using a clock stopper to prevent the clock from restarting. He detached the clock work mechanism, little realising that the clock work had not been made ineffective. He got home with the clock, made his wife jump, when the clockwork started functioning and activated a 22 cwt which nearly brought the roof down by its loud bang.

On more than one occasion, Hartley had to tackle time bombs, knowing full well that they were live ones. In these circumstances he had either to race against time or to go up in smoke. There was no other alternative. Once he got badly burnt, but escaped alive. On another occasion, he stopped the clockwork mechanism in a bomb by hitting it with a sledge hammer, that being the only tool in hand. One of Hartley's trickiest jobs was the bomb which fell close to Shell-Max Skyscraper at South Bank, London. The job was exceedingly complicated, but Hartley managed to remove the detonator mechanism, mount it on a lorry, and take it away to a distant spot, where it was exploded.

What won Hartley the George Medal was his disposal of a dangerous bomb dropped at Putney. This bomb lay there for many years after the War. In fact the reviewer of this book walked over this spot in 1951, when the Oxford-Cambridge Boat race was on. The bomb was discovered by workmen digging a shaft while excavating to a sewer by Lower Richmond Road, in July 1959. Hartley worked on this dangerous bomb, thigh deep in sewage, part of the time, when the base of the shaft collapsed. Steaming out the explosive after rendering the bomb safe, Hartley had to come out of the shaft fre-

quently, in order to escape dangerous TNT fumes. A year, after this heroic exploit, Her Majesty Queen Elizabeth II invested Major Bill Hartly with the George Medal.

Having completed his service career, Hartley is today keeper of a pub, "The Old Hatchett Inn" in the county of Hampshire. Anyone visiting this picturesque county of England and dropping in on this pub today will surely be regaled to something infinitely more delightful than a point of "mild and bitter", or a "double bass"!

W.T.V.A.

Bismarck's Rival: Political biography of General and Admiral Albrecht Von Stosch by Frederic B. M. Hollyday (Duke University Press, Durham, 1960). 316 pages. Price \$7.50.

Much has been written about Bismarck, the Iron Chancellor, who was responsible for the beginning of modern Germany. Very little is available regarding his rival, Admiral Albrecht Von Stosch, except possibly where historians have mentioned him as a man of doctrinaire liberal principles, basely intriguing with the opponents of the Government, in order to become the Imperial Chancellor. It is appropriate, therefore, that this study, carried out on the unpublished memoirs of Von Stosch, should throw some light on this remarkable character who came in such close touch with the members of the royal family, the armed forces, and the beauracracy of his time. Stosch remained in office with the approval of King William I, whose confidence he enjoyed. The political influence of Stosch rested on his achievements in army command, and the influence he wielded as Chief of the Admiralty. His independent mind and action brought upon him the unrelenting anger of the most powerful man of his time.

The book throws some light on the German liberal movement, the relation of the army to the Government and the day to day operation of the higher administration of the Empire. Prominent personalities stand out in their several human complexities. William I is credited with more strength and influence than is usual in customary accounts. Crown Prince Frederick William appears as a strong nationalist, not a weak liberal. The classic German nineteenth century write, Gustav Freytag, emerges as a firm partisan of his friend, Stosch. The domestic policy of the Iron Chancellor is pictured as the result of a curious mixture of *real politik*, interests of state and personal pique.

This book will be of considerable interest to students of German military history. For the research student it will be useful as a reference book, presenting a somewhat different account from the traditional picture of the Iron Chancellor. Albert Von Stosch was perhaps blinder than his great rival to the evil effects of intense nationalism and imperialism, but he had a much greater appreciation of the fearful results of the crushing of initiative, independence, and responsibility in the German people.

W.T.V.A.

Fidel Castro—Rebel, Liberator or Dictator? by Jules Dubois (New Bobbs-Merrill, New York, 1959) 391 pages. Price \$5.00.

Few men know more about Cuba and Fidel Castro than Jules Dubois. Since 1947 he has taken an active interest in Cuban affairs and espe-

cially in the activities of Fidel Castro and his associates. Combine this knowledge and background with a talent for writing and you have a fascinating biographical study. That is exactly what this book is.

The importance of Cuba particularly in view of its strategic location with respect to the United States of America is well known. Recent events have led to a reappraisal of United States policy as regards Cuba. This book gives the authentic background as to why and how Fidel Castro rose to power in Cuba. It outlines his hopes and aspirations for his country and himself. Castro's views on the basis of relationship between Cuba and foreign powers are also explained.

As the title portrays the author sets out to determine whether Castro is a rebel, a liberator or a dictator. In all fairness to the author the book must be read to know what the author considers him to be. I can recommend the book strongly as in addition to being informative it is extremely interesting.

N.L.B.

As I seem to Remember by Sir Leonard Woolley, (George Allen & Unwin, London, 1962). 113 Pages. Prices 12sh 6d.

"As I seem to Remember" is a delightful book. Sir L. Woolley was a renowned archaeologist, who later served in the Intelligence Corps during the war. He is reminiscing in this book regarding some amusing and quaint incidents, which came up during the course of his work and travels. Such humorous anecdotes as recounted in this book enliven the dull routine of life.

He writes about the confusion caused by no labelling or incomplete labelling of antiques in Museums. Then he goes on to describe the most fantastic forgeries of antiques. Many a guileless person could be thus cheated. He describes the friendliness and helpfulness of Railway authorities. He relates some curious stories that he had heard about the extreme politeness of the Chinese. One learns from Sir Leonard that army officers' make good diplomats too; and many a politically embarrassing position was covered up admirably by army commanders. Finally he relates some astonishingly funny incidents which occurred during his tenure as an Intelligence Officer.

The book is written in a charmingly light style. A number of incidents are put down in a somewhat chronological order as they occurred in Sir Wooley's life. The book moves through the action of the events described. The humour is not broad, but extremely witty. The book makes a rewarding reading.

I.A.

Asia and I by Estelle Holt. (Putnam, London, 1961). 263 pages. Price 21sh.

This is a travel book, written by an English woman, born in England and who spent her childhood in India. Her professional experience consists of an odd assortment of occupations—actress, stage manager, public relations officer, office girl, copy typist and so forth. After her husband's death in 1956, she ventured out from England, travelling through India, Pakistan, Nepal and Burma, where she met all kinds of people—nuns, jockeys, pundits, Maharajas, refugees, and circus performers. Her narratives are full of life and colour. The book is laid out in four parts. The first part describes the author's ramble through the expanses of India and Pakistan. The second part depicts scenes of Nepal. The third paints Kalimpong and Sikkim in tourist colours. The fourth part takes the reader through the wilds of Burma, and back again to India.

The journey begins in the setting of Rajasthan, amidst the pomp and circumstance of Maharajas, colonels and tiger shoots—quite the sort of thing which the Club bore, fresh from Poona, used to talk about in London a few decades ago. Not so with Estelle Holt. She tells her stories with charm and grace, giving homely touches such as her story of the romance of an oil man with a Rajput princess. From Rajasthan to Karachi—to the home of Aslam and Razzia, where she met a girl who told her how she made love on the telephone, and eventually got her parents to agree to her marriage to Aziz. When, however, the great day came, she was smothered in veils, and was seized with the fear that the man she was being wedded to might not be her true lover. Her fear was dispelled only when she later found herself in a room full of roses, with her beloved Aziz by her side.

The scene now shifts to a village in Sind, where after walking through twisting lanes to a group of houses, she found herself in the company of an assortment of sons, daughters, younger brothers, nephews, and nieces. A variety of contacts with men, women and children in Pakistan, arranged by Mr. A. K. Brohi, a Baluchi Muslim, culminates in his trenchant observation—"But it's all I want of any friend, any friend in any language—that he be human too". The unbiassed reader will no doubt believe, accept and reciprocate this sentiment. After a sojourn in Hyderabad, Sind, where she witnessed a marriage ceremony, she spent a few happy hours with a Nawab—a Pathan Chief who told her that "a Pathan feels undressed without his gun". From Pakistan, right across the Indian border, to Srinagar in Kashmir, where she spent her first night at the Tourist Reception Centre. Having run out of money, she thought she might feel terribly embarrassed, but contrary to expectations, she was surrounded by lavish hospitality and saw many places including Gulmarg, Gandarbal, Pampar and Pahlgam. From Kashmir on to Delhi, where she met a fascinating character, Raihana Tyabji, who had many interesting tales to tell regarding her previous births. Obviously, it was not the magnificent edifices, but the throbs in the hearts of people whom she met that touched the depths of her heart. And that is as it should be.

The second part of the book takes the reader over to Nepal, where she encountered the youthful Tenzing, who represented Nepal in cycling at the Moscow Youth festival in 1957. She saw the great Stupa of Boudhnath, and also witnessed the colourful ceremonial of a Buddhist funeral. At Boudhnath, Estelle Holt was guest of a Chinia Lama. She describes the several formalities observed in that Buddhist household. From Kathmandu, she set out on a "tiny expedition", which she has described in lively language. What she has to say regarding the "Bompo" priest of the ancient Bon religion, an old Tibeteen faith, sounds exceedingly mystifying. Talk about 'Yeti' fills a good few pages, while the ghost stories of Kathmandu add colour to a few more.

The setting for the third part of the book shifts to Kalimpong and Sikkim. She describes Kalimpong as a famous gluepot. "It is the most adhesive place I have ever been in. Visitors came for a couple of weeks, and are there quarter of a lifetime later". She describes how she was attacked by demons one night in Kalimpong, and had no air left in her lungs. She secured her release by reciting a mantra she had learnt from the Nepalese Chinia Lama. An entire chapter is devoted to many intimate details regarding Kalimpong and another to the worship of the snowy range in Sikkim. Since she visited Kalimpong soon after the Dalai Lama's escape from Tibet, Kalimpong happened to be—as *The Statesman* called it—"an adorable nest of spies". She could not help hearing a good few spy stories though she did not like

hearing them. Christmas time at Gangtok offered many colourful sights of dancing Lamas, and all sorts of pageantry calculated to ward off evil spirits. The snow peaks appeared clean and white. People were dressed in their gayest clothes. Having hobnobbed with the princess of Sikkim, she left Sikkim, feeling perfectly at home there.

Part Four of the book describes Estelle Holt's rambles in Burma. From a Kachin man in Rangoon she heard the story of the creation of the world. A Shan friend told her the story of a beautiful girl who used to swim every day in a deep lake, and how what looked to her like a stick she used to play with, turned out to be an important part of a dragon, which made her the mother of the first Shan. She went beyond Bhamo on to Nam Kun, right up to the border of Red China, encountered dealers in precious stones, and got back to Mandalay where she watched interesting dances. Detailed accounts of the festival of gambling and encounters with Bandits put finishing touches to her description of Burma.

On her way back to India where she returned in order to see the Dalai Lama, she halted at Calcutta, which she intensely disliked. In fact she was in no mood to see any body or talk to anyone. She did, however, have the good fortune of meeting Mother Theresa. This saintly nun has saved many lives. People kiss the ground on which she treads. "The Good Lord", observed Estelle Holt, "is the most positive personality in Mother Theresa's life". An Albanian by birth, she came out at first to teach in the Loretto Convent at Calcutta, but struck by the misery and sufferings of people in that city, she sought in 1948, the permission of Pope Pious XII to found the Missionaries of Charity. These nuns, wearing white, blue bordered saris even today go round rescuing people from starvation and death. Yet another chapter on Mrs. Holt's meeting at Mussoorie with the Dalai Lama tells the reader about this persecuted religious leader whose future seems to hang in the balance. The book concludes with a description of the Arakan where she proceeded after her visit to the Dalai Lama. What happened to her after that, how much more she has to tell regarding other countries and other people will naturally be reserved for her next book.

The geographical area covered in this book is a very small fragment of the Asian continent, but it is nevertheless an important fragment in the context of the strategies of the great power blocs which today are on the verge of an armed conflict. During World War II, this belt of the Asian continent—barring of course Burma, which came under the heel of belligerent Japan—escaped the ravages of shooting and bombing. Today the prospects are different. The people inhabiting these areas are by nature friendly and peace-loving. They are, in fact, quite oblivious of the dangers which threaten them. This is indeed the overall impression one gets from the book. What the author has stated is substantially correct. Whether these people will survive, and will continue in their social and cultural patterns or will be driven to reshape their thinking, their beliefs and their way of life by a cast iron social system, time alone will tell.

W.T.V.A.

Wellington at War (1794-1815) Letters selected and edited by Antony Brett-James (Macmillan, London, 1961) 338 pages. Price 42 sh.

Antony Brett-James who has made this selection of letters of "the Duke" from twelve stout volumes of Colonel Gurwood's edition of the Dispatches and other sources is a very painstaking and pertinacious author. This was already

clear to readers of his earlier volume *The Ball of Fire* which is a history of the 5th Indian Division. In the book under review he has given us a further proof of his historical erudition by the very able introductory notes given in the beginning of each group of letters and the numerous annotatory footnotes without which it would be difficult, if not impossible, to comprehend some of the remarks of Wellington. In the event, these letters, read with the copious introductory notes and the footnotes, provide an intelligible and connected story not only of the career of a great soldier but also of the military and political events of the period. For example Wellington's Indian letters (he was then known as Col. Arthur Wellesley) about the East India Company's war with the Marathas and Tipu Sultan throw interesting light on the men and times of the late 18th century, as do his later letters on the Napoleonic wars, particularly the fighting in Spain against Napoleon's armies led by able generals including his brother King Joseph Bonaparte. Antony Brett-James has made a very judicious selection of the letters right up to and including 1815—the year of the Battle of Waterloo. About this battle, the fate of which had hung in the balance till the evening and the victory in which was the crowning glory of Wellington's military career, the victor wrote: "It was the most desperate business I ever was in; I never took so much trouble about any battle; and never was so nearly beat."

Since most of the letters are to intimate friends and relations (e.g. in the earlier ones there are many to his brother Richard Wellesley (the Governor General of India) and Henry Wellesley (the Governor General's Secretary) they were not written for effect or publicity, and hence represent his real thoughts and feelings. Some of his remarks are therefore not very complimentary to many of his contemporaries such as the Indian princes, the Spaniards in general and many officers, colleagues and subordinates with whom he came into contact. His sarcasm is often bitter and at times even wounding. The letters also reveal him to us as a man possessing a variety of knowledge and clarity of exposition in respect of matters relating to military, administrative and diplomatic affairs.

The book has a bibliography, an index, a couple of maps and a dozen illustrations, but no picture of either Tipu or 'Boney' (Bonaparte), the two persons against whom most of Arthur Wellesley's battles were fought. The book makes a very satisfying reading and is not a dry scholarly work.

P.N.K.

Which Way to Turn: Napoleon's Last Choice by Claude Manceron (Cape, London, 1961) 192 pages. Price 18 sh.

The book deals with the story of Napoleon at the end of his luck—after Waterloo. The study of a crucial period in Napoleon's life during the few fatal weeks between Waterloo and July 23, 1815 make a most dramatic story and it has been well told by the author.

The book has been translated from the French and shows the behaviour of a great man in adversity—wavering and desperate to find a solution for his difficulties. Napoleon finally claimed the protection of the British Government and boarded 'HMS Bellerophon' on July 15. He was not allowed to land in England. On August 7, he was transferred to the Flag Ship 'Northumberland' in which he was taken to St. Helena. Here he died on May 5, 1821.

This close-up of Napoleon in torment is well worth a study.

N.L.K.

The Himalayan Journal (Records of the Himalayan Club) Volume XXII, 1959-60, edited by Dr. K. Biswas, M.A., D.Sc. (Edin.), F.R.S.E., F.N.I., F.A.S., F.B.S., (Oxford University Press, 1959-60) Rs. 14.

In the editorial to this issue, the President of the Himalayan Club points out that 'one of the club's main purposes is to extend knowledge of the Himalaya and the adjoining mountain ranges, their science, art, literature and sport'. This, the club does through the medium of the Himalayan Journal which, due to some unavoidable and other avoidable reasons, is perhaps the only facility the club has to offer to its members. It is therefore only fair that the Himalayan Club should try to get out at least one issue of the journal in a year. This particular volume is two years' effort.

This observation is even more pertinent because the period the issue covers, has been particularly notable for some interesting Himalayan ascents the accounts of which have not found place in the journal.

Further, on pages 174 and 175 of this volume the editor has disposed of some of the important expeditions in 1959 and 1960 by just listing them and giving the names of the leaders. Sketchy information of this nature may be acceptable in a newsletter or a brochure, but the H.J.s have always been looked upon as reliable reference for details of mountaineering activities in the Himalayas. In any case this would only have been in accordance with the aims of the club. Therefore, the least that could be expected of the editor would have been to give some additional data on the expedition like the exact locations and heights of the peaks, dates of ascents or attempts and names of members or at least the summit parties.

The articles in the journal, particularly accounts of the expeditions have been clearly and concisely written and generally convey the story of the adventure without wasting many words. However, one cannot help feeling that the editor could have culled the travelogues considerably to make room for other essential information.

It is pleasing to see that the old standards in the quality of production have been kept up. The paper, printing and general get-up are excellent. Articles are well illustrated with some good photographs and sketches. 'Indians on Mount Everest—1960' by Brigadier Gyan Singh though the story of a failure has been given a place of honour in the journal. Two shortcomings are, however, very obvious to the reader. Firstly, the absence of any photographs to illustrate the article. The expedition has taken enough good photographs to justify a photographic exhibition. Inclusion of even two or three good pictures would have added to the value of the opening article of the journal. Secondly the author, who should have known better, has stated in the opening sentence that the expedition was sponsored by the Himalayan Mountaineering Institute. Most people know this is not true and the editor as well as the author owe an apology to the sponsors of the First Indian Expedition to Everest and to the Himalayan Mountaineering Institute.

I fail to see why the pictures inserted between pages 20 and 21 have been placed so far away from the article they refer to. Nor have I found any reason for inclusion of five photographs to illustrate the account of a mountain trek in preference to Ama Dablam and Everest stories.

One closes the volume with an impression that the editorial office-bearers of the club journal had the intention but not the time to make a thorough job

and perhaps rushed through the editing and production of this issue of the journal in the face of pressing demand for the overdue volume from restive members of the club.

G.S.

Ascent of Dhaulagiri by Max Eiselin, translated from the German by E. N. Bowman, (Oxford University Press, London, 1961). 159 pages. Price 25 sh.

The superstitious would find it particularly significant to note that Dhaulagiri, the thirteenth 8,000 metre peak was climbed by a thirteen member team on, what is generally considered the unluckiest combination, Friday the thirteenth May 1960. To carry the numerology to perhaps a ridiculous extreme, the old placing of the peak as seventh highest has now been reassessed as sixth bringing the total of the two numbers again to the so-called unlucky thirteen.

"The Ascent of Dhaulagiri" by Max Eiselin is the story of the successful climb on the highest unclimbed peak of the time. With one American, one Austrian, one German, two Polish and eight Swiss members the expedition was truly international in composition.

"The membership shows that boundaries do not exist in the realm of mountaineering" is how Kurt Diemberger, the Austrian member and one of the summitters, very aptly expressed elsewhere the noble thought and the correct attitude regarding this great sport.

A novel feature of this Himalayan venture was the elimination of the long approach march by transporting men and material to the mountain with the help of a glacier aircraft. It was a bold experiment but whether in the long run it was actually economical in transportation costs or even in time is debatable. What is certain, however, is the fact that by the use of the aeroplane, the members of the party were deprived of the essential toughening up and acclimatisation which they would have acquired had they been permitted to march to their mountain. Nor is it possible to overlook that without effecting any saving, this unholy mechanisation of mountaineering did a few hundred poor Nepali porters out of jobs they look forward to getting when a major expedition arrives in the country.

After sketching the mountaineering history of the peak in 5 brief chapters, Eiselin goes into great details describing the approach flight from Zurich to Nepal. In the three longish chapters that follow, the author seems to revel in extolling the performance of the aircraft, and in his cynical dry humour regarding lack of hygiene and sanitation as well as uncouthness and lethargy of the uncivilised people of the East and the beauracratc red-tapism in India.

Of the remaining three long chapters which are really supposed to cover the story of the climb, two are again devoted mainly to the exploits of the aircraft "Yeti". Paragraphs after paragraphs running into scores of pages describe at length the aerial instead of mountaineering aspect of the expedition. The reader has to put up with frequent narrations of the reader's fears and anxiety for Yeti. From the bias given to the aircraft's share in the expedition, one cannot help feeling that Yeti was perhaps included in the team more for its reputation and publicity than as a result of sound planning. That the leader took uncalculated physiological risks in transporting the climbers from the plains of Nepal to over 17,000 feet in a matter of minutes, is amply brought out in the book. Kurt Diemberger and Ernst Forrer, two of the more experi-

enced climbers of the party, were the first to be left up at the Dumbush Pass. Their condition; 24 hours after suddenly reaching this altitude, was reported in the following words to the leader by the Pilot after his following day's sortie: "... These five climbers are lying about like dead flies. They had not even opened their tent. When we landed, all they could do was to lie flat in their sleeping bag. . . ."

It was not surprising, therefore, that most climbers and even the seasoned sherpas were victims of acclimatisation failure and had to be flown back to the plains for recovery. During his first night's ordeal at Dumbush Pass after being flown up, Max Eiselin himself had a taste of the experience. "... I was quite serious. . . . I turned from side to side, minutes seemed like hours, and I cursed mountaineering in general and the Himalayas in particular."

As for the logistic cover for the expedition, Eiselin seemed to be so obsessed with the employment of Yeti in the support role that he omitted to make an alternative plan in the event of something happening to the plane. Therefore when Yeti did get grounded the leader, in his anxiety, himself went to Pokhra to supervise the repairs which took three weeks. During this period Eiselin had lost touch with the expedition completely. Fortunately for the expedition, by the time the aircraft finally crashed and was damaged beyond repairs, it had flown sufficient stores and most of the men to the mountain.

Eiselin's administrative plan certainly lacked flexibility. In fact, after the write off of Yeti, there was really no plan. The expedition was split up in a number of small groups. As the leader never really was in a position to influence the tactics on the mountain he could do no more than to expect that "... they will have to make up their own minds. . . ."

This is what Eiselin has written at the time of leaving Dumbush Pass for NE Col.

"The expedition which should have joined issue as a united party against one of the greatest mountains in the world, was now like a scattered army group fighting a lost battle." The leader's lack of control is further brought out by himself in expressing the hope that

"... five distinct and isolated parties must cooperate like clockwork, because if only one of them failed in its task the whole expedition would grind to a halt."

As for the coherence of the story it is really difficult for the reader to follow clearly what happened and in which order. Overlapping events and dates are so confused that one fails to get a clear picture of the climb. The author spends considerable time cursing the radio and showing his anxiety about Yeti. 'What could have happened' to this and that, and the morbid thoughts of the writer are rather irritating. Also the warmth and affection with which an average leader talks about his comrades were certainly absent. It is indeed a pity that mountaineer Max Eiselin chose to write more about the machine than his men and the mountain.

One of the gratifying features of this expedition was its international character. But expressions like 'Could it be French-Swiss?' 'the Austrian' 'German Swiss' do not give an impression of cohesion in the team. In fact, the overall story gives a feeling of an undercurrent of discord between different groups. Arguments and friction in high altitude camps have been unduly high-lighted by the author. As Eiselin was himself not present on these

occasions these distasteful incidents have been described on hearsay which go to show the bias.

By and large the author has failed as a chronicler of what could have been a great story of an historical expedition. While the style of the author makes easy reading his inability to separate the grain from the chaff often leaves the reader at a loose end. His description of the sherpa Nima Dorje's rescue from a crevasse was, however, very lucid and interesting. I have nothing but praise for the standard of production of the book. Paper and printing are good. The story is well illustrated with a couple of excellent photographs and five outstanding colour plates.

G.S.

The Swiss Alps by Vivian H. Green (Batsford, London, 1961). 240 pages. Price 30 sh.

"I have written a book of this kind because I find nowhere as satisfying as the Swiss Alps for spiritual and physical refreshment. I am neither a climber nor a sportsman, but I hope that what I have written may help others to appreciate and understand the beauty and the people of Swiss Alps."

In introducing the book with this modest statement, Dr. Vivian H. Green not only underlines the aim of the book but also lays bare his own sympathy for Switzerland, her mountains and her people.

In the map on pages 8 and 9 the author has divided the Swiss Alps in 9 geographical regions. This gives a plan for the tour on which, through the pages of this book, he proposes to guide the reader personally.

The main structure of the Swiss Confederation has been built on the foundation of three strong mountain cantons Uri, Schwyz and Unterwalden which border the lake of Lucerne. In the introductory chapter Dr. Green sketches the early chequered history of the country and explains how, in the fourteenth century, the three original cantons were joined by others in order to form a united front against their Hapsburg overlords.

The place of family and home in the Swiss way of life and the cantonal feeling have been the dominant political force which, in spite of this small country's vast diversity of peoples, languages, religions and customs, has resulted in the formation of a strong democratic nation.

"The family from the oldest to the youngest tossing the hay under the warmth of the summer sun or taking turns to watch the cattle in late autumn bear witness to the strength of the home in Swiss life.... In the Alps communal feeling runs deeper and flows more strongly."

Starting from the historic centre of Switzerland, the Forest Cantons round lake Lucerne, the reader begins his well conducted and educative tour of Interlaken and its neighbourhood. He misses nothing interesting before going over the passes and through the valleys of the Bernese Alps. Then to the Rhone Valley, where he suddenly finds himself amongst the French speaking people of Switzerland and gets a glimpse of Mont Blanc and the aiguilles which have made Chamonix in France one of the greatest mountaineering centres in the world.

The reader then turns Eastward to the Pennine Alps where his enthusiastic and knowledgeable guide is as fluent in describing the rough and rugged grandeur of this wild looking country as he was in painting a picture of the soft

and mellow alpine valleys and lakes. Zermatt, Matterhorn, Saas-Fee and scores of other big and small features of the region are meticulously introduced. Whether it is a mountain peak or marmots scurrying in the rocks, medieval fortifications or the great modern dams, nothing that is of interest, general or particular, is missed out.

When completed in 1965, the grand Dixence dam will be 940 feet high, the highest in the world'. A true lover of Nature in the raw, the author does not hesitate in the sanctity of the mountains. 'The finished project will be a masterpiece of engineering skill. Yet something is lost, something of the wild unsophisticated nature of the mountains, something of the freedom, and remoteness of Alpine life'.

Moving further East to Ticino the reader notices definite Italian influence in language, features of the people, their customs and habits. He visits Locarno, Lugano, Bellinzona and a host of other places, peaks and passes each one having its importance and each with its own charm.

In Engadine the reader learns that St. Moritz is not only a modern world-famous mountain resort but was just as well known in Roman days for the therapeutic properties of its waters. The sixteenth century physician Paracelsus affirmed in 1539 that 'of all the mineral springs in Europe known to me, I give preference to that which I found in the Engadine at St. Moritz, the water of which is in August acid like vinegar. He who takes this water medicinally regains his health, and will never be troubled by stone or gravel, gout or arthritis. It strengthens the stomach so that it can digest tartar even as an ostrich digests iron and a blackbird sand'.

In Crisons the next area to the East the reader finds that the region is divided linguistically. Half of the population speaks German, a seventh Italian and some 40,000 still use Romansch which originated as *lingua rustica* of the Roman Empire. The reader goes through broad and fertile valleys and over 'mountains which are shapely rather than awe inspiring. Farms cattle and pine trees abound, and villages which chequer the valley are pleasant'.

The reader concludes his tour by visiting the Alps of North East Switzerland, an area 'little visited by the tourist. . . . The countryside where the foothills slope gently towards the rocky mountains is verdant with undulating meadows, in which chalets seem planted in a haphazard yet artistic fashion as in some wonderful toy garden. It is soothing rather than savage, well cultivated, and if mountainous, yet less arduous than the more, familiar Alpine districts'.

Having completed the tour the reader realises that 'the Alps do not properly belong to Switzerland alone. They extend into France, Italy and Austria, but Switzerland contains their heart.' The reader has been provided a large scale detailed map each of the nine regions he has gone through. 55 of the finest Alpine photographs illustrate various chapters. A beautiful colour photograph adorns the jacket.

The author's quality of vividness in painting a true picture testifies that he has an eye for detail and a fund of information acquired through meticulous study and through his personal and intimate association with the country. The book abounds in interesting anecdotes, and quotes from other lovers of the Alps.

Altogether a very fascinating and instructive book. The author has certainly achieved his aim.

G.S.

Official History of the Indian Armed Forces in the Second World War 1939-45: Campaigns in South-East Asia: Hong Kong, Malaya, Sarawak and Borneo by K. D. Bhargava and K. N. V. Sastri (Historical Section, India and Pakistan), Rs. 25.

This is the ninth volume in the series "Official History of the Indian Armed Forces in the Second World War". The volumes in the series are being written and published by the Historical Section which is a joint venture of India and Pakistan under the guidance of a noted historian, Dr. Bisheshwar Prasad who is not only the Director of the Section but also the General Editor of the Series. The standard of the present volume, both in respect of the reading matter and production of the book is high and in keeping with the previous volumes in the Series reviewed in these columns from time to time.

The book relates how the Japanese, taking advantage of the 'surprise' achieved by their sudden entry into the war on 7th December 1941 and the astounding unpreparedness of the Western Powers, marched from victory to victory and became, within a matter of months, the masters of practically the whole of South-East Asia belonging formerly to the Dutch, the French and the British. The Indian and Allied garrisons' though pitifully meagre and out-maneuvred, had nevertheless the will to resist and put up as much of a fight as was possible under the circumstances. Yet the book is not merely a chronicle of the events as they occurred from day to day but gives also a background of the Allied and Japanese strategy which actuated their respective actions.

There are very good maps, some useful appendices, a bibliography and an index and of course some attractive illustrations excellently reproduced.

P.N.K.

Army Diary, 1899-1926 by Col. R. Meinertzhagen (Oliver & Boyd, London 1960). 301 pages. Price 35 sh.

These are extracts from the diary of a British army officer who served in India, the Middle East, East Africa and other places during his 27 years' career in the Army. Though it is claimed that the diary was not kept with any idea of eventual publication, one gets a contrary impression from reading the book, which is interspersed with remarks which show an attempt at crude exhibitionism and self-justification hardly expected in an autobiography of this sort. Otherwise where was the necessity of giving flattering Confidential Reports on the author himself in one of the appendices? It is true that the author was not self-seeking or pushing—and perhaps it is because of this that he did not go beyond the rank of a Colonel in spite of a distinguished and long career—but every page shows his boastful and vain nature. He was also certainly very frank and outspoken, though not always correct in his opinions as is clear from his derogatory and sweeping remarks about the Indian troops. Here are a few examples:—

(1) Writing about the battle at Tanga in East Africa in the first world war he says: "I never had much faith in our second rate Indian troops and the bubble of the Indian Army will now burst." p 89. On the same page again:

"Our British officers behaved like heroes, but none of them had a chance with their men running like rabbits and jabbering like monkeys. These chicken-hearted Hindus were already jabbering with fear in the lighters when on their way from the ships to the shore.—"

(2) "—they were all jabbering like terrified monkeys—" p 91.

(3) "Disgraceful behaviour of our Indian troops" p 94.

(4) "It was too piteous to see the state of the men. Many were jabbering idiots, muttering prayers to their heathen gods, hiding behind bushes and palm trees and laying down face to earth in fields of the ground with their rifles lying useless beside them. I would never have believed that grown-up men of any race could have been reduced to such shamlessness.

"This is a question I have openly spoken about in India; and others beside myself, in fact, most officers who are not obsessed by the vaunted efficiency of the Indian Army, regard two-thirds of it as quite useless. I have often said so and have as often been told that I was mistaken." p 96.

(5) "On my way back I found seven Rajput sepoy cowering under a bank in deadly terror of their lives." p 92.

It is doubtful whether he would be supported by any other British officer in his opinion of the Rajputs and other Indian troops. In fact he himself admits in example 4 above that he was often told that he was mistaken. But he persisted in his view.

The blurb describes the book as having been written "vividly and with a rare sense of humour." Here are some examples of the so-called humour:—

(1) "My mattress consists of the underclothing of the lady of the house, nice soft bits of lingerie, and for the blankets I have a Union Jack and three German flags. My pillow is palm leaves stuffed into the corsets of a stout lady whose name I do not know." p 90.

(2) Writing about his simple, inexpensive and reliable method of getting 'intelligence' from the enemy side, he writes: "I also found that the contents of German officers' latrines were a constant source of filthy though accurate information as odd pieces of paper containing messages, notes on enciphering and decoding, and private letters were often used where lavatory paper did not exist." p 127.

(3) Once when in Ladakh, he sent a stamped receipt for some back pay to the Command Paymaster on lavatory paper—bromo. When exception was taken to this and the A.G.'s office asked him for an explanation for conducting official correspondence on "shameful paper," his reply was that bromo was not shameful but useful paper and that non-combatants of the Army in India had no sense of humour (pp 281-82). Conducting correspondence on bromo paper may be rare indeed, but whether it shows any sense of humour is extremely doubtful, and one can only say that the non-combatants were indeed fortunate in not possessing such 'rare' sense of humour.

From beginning to end of the book one rarely comes across anything the reading of which may be regarded as really rewarding. Most of the opinions are dogmatic and jejune, and one wonders what useful purpose can be served by the publication of a book of this type unless it be to air ones

own prejudices. An autobiographer has to realise that after all the world does not revolve round his navel.

The book has some good illustrations and maps

P.N.K.

Corunna by Christopher Hibbert (Batsford, London, 1961). 216 pages. Price 21 sh.

This is yet another notable volume in the British Battles Series and relates the story of the Battle of Corunna (16th January 1809) which Sir John Moore fought on Spanish soil against the French on a cold January morning at the end of one of the most celebrated retreats of history. Although Moore lost a considerable portion of his force during the retreat and the battle, and was himself fatally wounded, he lived long enough after the battle to know that the French had been repulsed and his force could embark safely.

The story belongs to the period of the Peninsular War which had begun when Napoleon had placed his brother Joseph Bonaparte on the throne of Spain. Unexpectedly for him, the Spaniards had started a national resistance to French rule, and England had quickly seized the opportunity to offer help to the insurgents.

Sir John Moore was in command of the British troops in Portugal in September 1808, and he was asked to advance into Spain "to co-operate with the Spanish armies in the expulsion of the French from that Kingdom". The author has given a graphic description of Sir John's march from Lisbon to Salamanca, and his retreat from there to Corunna. It comes as a revelation to read of the terrible conditions of terrain and weather, the filthy surroundings in which the troops had often to bivouac and the miserable supply and food position. Add to all this the badly organised or unorganised and half-hearted support of the Spaniards and at times their unco-operative attitude and you can get some idea of the qualities of leadership and daring which enabled Sir John to accomplish the task.

By the time he was in Salamanca, the British force was out-numbered by the French by ten to one, and Napoleon himself had decided to direct his troops against Moore's small force of 20,000 or so. Though faced with such odds, Moore did not retreat to his old base in Portugal, but boldly struck out north-east to threaten the French communications with France. This move provided some relief to the south of Spain, for overwhelming French forces were diverted towards Moore. He then retreated through the mountains towards the port of Corunna in the extreme north-west. Here he turned and gave battle to a huge army of the French who had been hotly pursuing him. A fierce battle raged throughout the day in which Sir John was mortally wounded. The French were however checked for the time being and the remainder of Moore's army was able to embark in the transports which were in readiness at the port.

The whole book and particularly the account of Sir John's march and retreat is worth reading as giving a vivid picture of what soldiering meant in those days. There are some useful maps and numerous pleasing illustrations, a bibliography and an index which considerably enhance the value of the book. The standard of production and printing is very high and is in keeping with the other volumes in the Series.

P.N.K.

Battles of the English Civil War by Austin Woolrych (Batsford, London, 1961)
200 pages. Price 21 sh.

This is one of the several volumes in the British Battles Series being brought out by B. T. Batsford Ltd (London), and maintains the high standard of production of the earlier volumes. It describes with full tactical details the three most important battles of the war between King Charles I and the Parliament, viz Marston Moor, Naseby and Preston. These battles were no doubt of decisive importance and their political results were far reaching: an English King was executed and a Commonwealth established—for the first and last time in English history. The civil war and the short-lived Commonwealth of Cromwell left a deep imprint on the national consciousness, but the significance of these battles, purely from the military point of view, is not very great judging by modern standards of tactics, strategy or generalship. Nonetheless, some of the leaders on both sides possessed considerable military acumen. A few of the more important persons who stood above the common run of leaders of those days were Prince Rupert, the Earl of Essex, Cromwell, Ireton and perhaps King Charles himself. Mr. Woolrych has vividly brought out their qualities and abilities as well as their failings in a very simple and delightful way.

Both the armies—the Parliamentarian and the Royalist—consisted largely of raw levies and 'gentlemen volunteers', untrained or at best half trained. Yet they fought and died like heroes. One striking feature of the war was the changing of sides—both by officers and men. Many "trimmed their sale to every change of the wind". A typical example is that of Sir John Hurry who changed sides as many as three times. This is not surprising for, after all, it was not a war of survival or strong loyalties, but was merely the result of a "passionate protest against governmental incompetence, extravagance and corruption", and there was a considerable peace-party in both houses of Parliament. A natural result of this feeling was that after a battle victory was seldom followed up by pursuit or annihilation of the vanquished. Sometimes armies faced each other for a day or two and then went away without fighting, as on Turnham Green. Here "on the field were two or three hundred Londoners who had ridden out purely as spectators; the slightest hostile move by either army sent them galloping towards home, and every time they did so a few faint-hearted citizen soldiers slipped away from their colours".

The author has eminently succeeded in capturing the atmosphere and colour of those days by using first hand sources, and of particular interest are the numerous plates excellently reproduced. There are some maps and an exhaustive bibliographical note and an index. The paper, binding and general get-up of this small book leave nothing to be desired.

P.N.K.

The Foxes of the Desert by Paul Carell, translated from German by Mervyn Savill (Macdonald, London, 1960) 370 pages. Price 30 sh.

This is a fascinating story of the German Afrika Korps charmingly told by a German and translated into English by Mervyn Savill. It brings out clearly and convincingly and in a very readable style, General Rommel's strategy, the bold strokes and masterly yet simple coups which had given him the reputation of being invincible in the desert warfare that developed in North Africa (1941-43) after the Italians had been defeated and pushed westwards from the Egyptian border for a distance of 600 miles by a comparatively small force of Indian and other Allied troops under Wavell, Rommel's first offensive in which he

pushed back Allied forces eastwards again was a masterstroke of a military genius, and resulted in the recall of Wavell who was replaced by Auchinleck. Rommel's success stemmed from his superior cunning and the readiness to take risks, for, as somebody said, "If victories could be calculated there would never be defeats." It was however not all due to his superior cunning: he also had superior weapons, particularly the wonder gun, 88 mm. The British had no answer to this gun and it was largely with the help of the 88 mm that a few officers and a few hundred soldiers of the Afrika Korps were able to defend the Halfaya Pass against repeated attacks of the numerically superior Indian and British forces with Mark II tanks. The area of the Halfaya Pass was soon converted into a graveyard of these tanks and Allied troops. No wonder that among the British soldiers the pass came to be termed the Hellfire Pass. Not only this; the Germans were able to turn the tables on the British and pass from the defensive to the offensive, and defeat the carefully planned Operation Battleaxe. There is no knowing what Rommel would not have done—for he had grand plans of reaching the Suez, taking Syria and then opening the Red Sea route to India—if only Churchill had not ordered the holding of Tobruk 'to the last man'. Tobruk was a thorn in Rommel's side and a constant threat to his flank and rear. He could not leave this thorn unplucked and carry out his grand strategy of advancing towards Cairo and Suez. Tobruk held on and on, and Rommel's dream remained a dream. All this has been described before by other writers, but it is nonetheless worth reading again in this very pleasantly written book.

Another chapter worth reading is the interesting story of the abortive attempt of the British Commandoes to capture Rommel. Some of the details and facts given about this episode are not to be found in any other book.

Ultimately, when the British learnt from their defeats and built up preponderating superiority by the spring of 1943, the Afrika Korps met with reverses. From the beginning however, treachery had also begun to manifest itself and the chapters entitled the "Betrayed Offensive Plan" and the "Betrayal of Medenine" are great eye-openers, and prove how sometimes the secret services can also play a decisive role in warfare. Rommel's successes, coming after Italian defeats, had no doubt aroused the jealousy of the Italians whose prestige had suffered by comparison, and although Italian soldiers fought well and co-operated with Rommel, somebody in Italy and also in North Africa was betraying the Axis plans to the Allies.

The book is thus a mine of information, which is not dull or drab at any place and in addition there are numerous photographs of action and personalities. A real and authentic contribution to the literature of the Second World War indeed.

PNK

History of Coast Artillery in the British Army by Colonel K. W. Maurice-Jones (Royal Artillery Institute, London, 1959) 324 pages, Price 25 sh.

It is perhaps the first book on consecutive history of the Coast Artillery in the British Army right from its inception to the time of the disbandment, on termination of World War II. The author has divided the book into XXVI chapters. First XXV chapters are divided into various periods from 1540 to 1945. Each chapter brings out very clearly not only the part played by Coast Artillery in the various battles but also the training and administrative difficulties experienced and how the developments kept pace in this arm of 'fixed

defences' with the general advancement of the scientific age. For more than four centuries Coast Artillery had defended the important ports and harbours of Great Britain and her overseas possessions. Coast Artillery, which was always closely linked to the Royal Navy and for which it existed mainly, not only performed the duties of watch & ward but also provided secure and safe bases and anchorages for the Royal Navy, wherever the fleet was operating. But with the advent of air power, scientific progress, invention and even possibly economy in February 1956 a decision was taken to abolish the Coast Artillery. After 31 December 1956, Coast Artillery ceased to exist in the British Army. The function of the Coast Artillery will now be left to some other organisation probably armed with torpedoes, rockets, and guided missiles, all with nuclear war-heads.

This well-written and interesting book is commended to the soldiers and civilians alike. It not only gives the graphic story of the tribulations through which British sea defences have passed over the centuries but also throws into relief a number of minor episodes of historical interest which occurred during the past 400 years.

A.N.S.

Grant Moves South by Bruce Catton (Little Brown, Boston, 1960) 564 pages. Price \$6.50.

This is Volume II of a three-volume biography of General Ulysses S. Grant, the famous hero of the American Civil War (1861-65) who was largely responsible for the victory of the Union forces over those of the southern secessionists. The first volume under the title *Captain Sam Grant* was written by the famous biographer Lloyd Lewis, who, however, died before its publication. The present volume prepared by Bruce Catton with the help of Lewis's notes and other material is thus the second volume in the series, and brings the story of the civil war and of Grant's successes upto the end of the siege and capture of Vicksburg.

It is thus not merely a blow-to-blow account of the great battles of this war but also of the life and methods of one of the greatest generals of modern times.

The picture of Grant which gradually takes shape as one reads the book is so much like that of an ordinary gentleman that one is pleasantly surprised to discover that such a man could be such a great soldier and general. He was short and unimpressive and did not try to look imposing by decking himself with ribbons and uniforms. We are told that "no stranger seeing this man in a crowd would ever be moved to ask who he was". Nonetheless he could always get his men to do their duty by "a hard look and a soft word". It does not mean that he did not impose discipline without which no army can function effectively. But his discipline was not of the type one has come to associate with Prussia for example. In his first major order issued to a unit of his volunteer soldiers Grant wrote: "All men when out of camp should reflect that they are gentlemen—in camp soldiers". And again in the same order: "absence from camp will not be received as a palliative for any absence from duty." (*Grant's own punctuation and spelling*). He thus combined firmness with humanity and it is because of this that though he was not feared he was respected and obeyed, and his subordinates considered it an honour to win his approval and approbation.

In the end when he had won many important battles and the southern states lay defeated, he alone apart from Abraham Lincoln himself, realised that the rebels must be treated with sympathy and there should be no reprisals. He understood, too, "that although Rebellion must be crushed with the utmost rigour, the Rebels themselves were men who would again be friends and fellow citizens."

The book is thus a delightful biography abounding in personal touches and intimate glimpses of the great man, so typically American in style. There are some maps, a useful bibliography and an index. Bruce Catton has made an excellent job of it indeed.

P.N.K.

"Spy Ring"—The Full Story of the Naval Secrets Case by John Bulloch and Henry Miller (Secker and Warburg, London, 1961) 224 pages. Price 15 sh.

"Spy Ring" is the sensational story of the operations and the detection of a supremely successful cell of spies, John Bulloch and Henry, Miller, two journalists, working for the 'Daily Telegraph', investigated into the lives of the agents working for Russia.

The book opens dramatically on the 7th of January '61, with the unsuspecting victims walking into the neat trap arranged for them. A master spy, a member of the Russian Intelligence Service, was provided with the identity of Gordon Lonsdale, a Canadian who probably died in Finland between the years 1939-45. The fake Lonsdale enters Britain through Canada. His mission was to obtain secrets regarding the techniques of underwater detection being employed by the NATO countries. His accomplices in this mission were Morris & Lona Cohen alias Peter and Helen Kroger. These two were Americans who were staunch supporters of Communism and had shown their loyalty to the cause by helping the Rosenbergs and Col. Abel. In 1955 these three spies arrived in England to lay out a fantastically successful spy ring. Lonsdale recruited the services of an avaricious clerk in the Underwater Weapons Establishment at Portland, H. F. Houghton and his fiancée, Miss Gee.

This book reveals the ingenious methods used by Russian agents to obtain and relay to Russia secrets of the highest importance. Was it not for the drunkenness of Houghton, the scrupulously careful and clever technique of obtaining information and transmitting it to Russia, used by Lonsdale and the Krogers would never have been tracked down. The book brings to light the new standardized methods of operation adopted by the Russian Secret Service. It also points out the inefficiency of the counter-espionage in the NATO countries, and the ease with which spies are allowed to obtain passports, land and merge into the life of the people. In the words of the authors, "the detection of espionage must be given the same priority as the development of effective means of defence".

The book compels the attention of the reader because of the astounding nature of the work carried on by the spies. The book has been evidently compiled from journalistic reports. And therefore it is loosely knitted together. There are many repetitions because relevant chapters have just been strung together. On the whole, the book is a highly interesting one and makes one realise the gravity of the menace from foreign espionage.

I.A.

'The Big Push': A Portrait of the Battle of the Somme by Brian Gardner (Cassell, London, 1961). 177 pages. Price 21 sh.

In this book the author has critically examined one of the important

battles of World War I—*The Battle of the Somme*. In this battle there was so much carnage that its death role, even now after Stalingrad and Hiroshima, seems staggering. 'The battle of the Somme' has stories of blunder, of heroism, of tragedy and of bloodily won success. The bitter fighting in the presence of devastating casualties made most extraordinary demands on commanders and troops. The reward was an advance of nowhere more than 8 miles in the direction of the push along a front of 12 miles. The battle also highlighted the fact that prolonged shelling cannot reduce an entrenched enemy to inertia. If this had been realised earlier, perhaps the casualties would not have been that high.

The author has examined in detail the policy, planning and action of the British and French armies at the Battle of the Somme in a very readable manner.

N.L.K.

The French Revolution by Georges Pernoud & Sabine Flaissier (Secker and Warburg, London, 1960) 350 pages, Price 25 sh.

There are several good books on the French Revolution of 1789, but the present one is unique in that it gives significant selections from the writings of eye witnesses on different phases of that great upheaval, the forces and ideas released by which influenced the course of European history throughout the nineteenth century. The fall of the Bastille, the attempted flight of the Royal family, their subsequent misfortunes, the execution of the King and the Queen, the terror and all other important events, including the mass murders of the aristocrats and later of some of the revolutionaries themselves (such as Robespierre), and many other incidents are presented through the evidence of witnesses "authentic, pure, uncommented and coming from every point of the compass." The details are at times sickeningly horrid but they are nonetheless true and throw a flood of light of character of that complicated human being called the Frenchman. The Frenchman of those days was a malcontent (as he is today) and when his discontent found expression in a revolution, the success of which was threatened by the intervention of the hated Austrians and Prussians, he adopted extremely inhuman and barbaric methods to stamp out and exterminate anyone even remotely suspected of having sympathy with the old regime. After reading some of the details—such as the joy of the citizens of Paris at seeing the severed heads of the 'aristocrats' being carried in procession stuck up on pikes—one feels it hard to believe that the same Frenchman in peace time made a leading contribution to the fashioning of Western civilisation. And yet that too is a fact! Which only goes to show that man whether in the East or West is a very complicated and contradictory creation. This is indeed a very instructive, interesting and readable book by two French authors, competently translated into English by Richard Graves and has a preface by Andre Maurois. The list of sources at the end of the book is very useful for students of the subject, and shows the great amount of research which the authors must have undertaken in compiling it.

P.N.K.

White Ensign by Captain S. W. Roskill, D.S.C., R. N. (Retd): (United States Naval Institute, Annapolis, Maryland): 480 pages. Price \$4.50.

Readers familiar with Captain Roskill's series of brilliant accounts of the 'War at Sea' will no doubt welcome this additional book on the 'British Navy at War 1939-1945'. The author brings to bear on his accounts—as one has now come to associate with him—his lucid narrative of events in limpid prose; very descriptive accounts with facts and figures; all with that faculty of

his: of being able to take the reader to the scene of battle; to the scene of those pregnant silences or indeed of prolonged and sapping inactivity.

And yet it may be wondered why an additional book on the subject has been published which in one volume covers the whole of the war at sea?

Answer to that apparently lies in a project of the United States Naval Institute to 'publish separate histories of each of the great navies engaged, each history in turn being written by persons having intimate inside professional knowledge of the whole conduct of his country's naval war—in other words not merely historians but leading professional naval officers as well'.

An ambitious and worthy project.

The author writes of the Ships and the Men, Challenge on the Oceans, the Mediterranean Fleet in Triumph and Adversity, Disaster in the East, the Victory of the Escorts 'few in number but indomitable in spirit': what a tale of travail and courage is enshrined in those words!—and providing as they do outstanding examples "of what determined leadership supported by complete mutual understanding between individual Captains, can accomplish—even in the face of a greatly superior enemy". And so on; Success in the Atlantic and Arctic and the inevitable—Victory.

Graphic descriptions of the battle of the River Plate, search and destruction of Bismarck, surrender of the Italian fleet, attack on the Tirpitz—help to refresh memories of books one may have read some time ago.

Besides, it is as the author so proudly and so aptly puts it, "a tale of endurance in face of disaster, of patience in adversity and of persistence in the pursuit of victory".

"White Ensign" enhances the value of the books so far published on the subject and at the same time gives a foretaste of others to follow forming as they will the concluding series of 'War at Sea'.

These are awaited.

The book contains liberal collection of photographs which is always a welcome feature in books on war.

Appropriately enough the book is dedicated to the Officers and Men of the British Maritime Services who fought on, above or beneath the seas: a dedication which time shall never belittle.

D.A.K.

The Glorious First of June by Oliver Warner (Batsford, London, 1961) 184 pages. Price 21 sh.

During the wars of the French Revolution, many battles were fought on land and sea, and this is an account of the first full-scale naval battle between the British fleet commanded by Lord Howe and the French fleet under Admiral Villaret-Joyeuse fought on the First of June 1794. It resulted in a complete tactical victory for Britain. Its moral effect on the British public and the armed forces was very considerable, as it was perhaps the first notable British victory after the American War of Independence (1775-83) in which the British had suffered numerous humiliating reverses and ultimately the loss of the American colonies. The prestige of British arms was at the moment at its lowest, and when Lord Howe brought six prize ships (after sinking a few more), the sight of these French ships lying at anchor at Spithead acted as a tonic to the nation. It will be recalled that during the American war, the French had helped the

British colonies in their fight for freedom, and now when revolutionary France was surrounded by a hostile Europe, it looked towards the States for help. France's chief need was food and there were numerous ships full of grain lying ready at American ports to bring the much needed cargo to the French who were on the point of starvation. Admiral Villaret-Joyeuse was bringing these ships from America and his fleet was providing a protective cover. Lord Howe learnt of it and went out into the open sea and with some difficulty brought the French fleet to battle. Though he inflicted a complete defeat on the French fleet, the food ships managed to escape to France, and Lord Howe failed to exploit the victory, and returned home with the captured ships. That is why the sea-battle of the First of June was only a tactical victory and not a strategic one. Why Lord Howe did not pursue the food ships, the importance of the battle purely from the military point of view, the tactics used on both sides, and why the battle was still called glorious, and all other relevant matters are fully and ably discussed by the author, who is no doubt one of the foremost living military historians. The get-up, printing, illustrations, and the paper used are all of excellent quality. The publishers are to be congratulated on bringing out the "British Battles Series", of which the book under review is the latest. Nearly a dozen volumes in the series have already been published and another half a dozen are planned. How one wishes some such series could be started in our country concerning important battles of Indian history.

P.N.K.

"Naval Challenge 1945-1961" by Paul E. Garbutt, M.B.E. (Macdonald, London, 1961) 119 pages. Price 21 sh.

An impressively bound book with an impressive title.

Of the possibilities and probabilities of the future there is no end. Informed speculation where possible would be a fascinating and worthwhile pastime; a restraining feature during this process of informed speculation being however a rather unnerving "rate of obsolescence and the risks, with the limited resources available, of 'backing the wrong horse'".

Reading through "Naval Challenge 1945-61" certainly starts one thinking and speculating along certain lines.

The story of Britain's post-war fleet with a thought-provoking foreword by Sir William James, G.C.B., takes one at a brisk pace through the post-war years: the inevitable "cuts" (similar to the 'Geddes Axe' in the early 20's); and the various maritime episodes.

Following these interludes, Paul Garbutt writes of new ships and equipment; the Navy and the Atom; a brief chapter on Commonwealth navies and finally what is perhaps a very useful part of the book, a chapter on 'present and future' including remarks on the significance of the new Dreadnought class of nuclear-powered submarines.

In the concluding chapter the author refers to the present largely defensive role of the Royal Navy and writes wistfully of regaining something of its old dominance in Britain's world-wide strategy.

The reference to regaining 'something' implies its loss at some stage or other and one may wonder.

The book is a treatise on what, in the opinion of the author, is the Navy's attempt to find a suitable reply in difficult and changing circumstances to the challenge of the times rather than the reverse.

D.A.K.

Sea Power in the Nuclear Age by Anthony Sokal. (Public Affairs Press, Washington, 1961) 268 pages. Price \$6.00.

The dilemma that has haunted strategic planners in our time is the number of weapon systems that claim admittance to the power spectrum. Having set himself the task of championing both conventional and nuclear missile weaponry for the United States Navy, the author builds up his case by propounding that sea power possesses far more flexibility than either of the other two methods of projecting national power, without actually telling us so. In contemporary power politics a nuclear capability must be maintained at instant readiness, in the hope that its use will thereby be unnecessary, the capacity to fight local non-nuclear wars must also be maintained by the big powers. For both types of warfare the main theme throughout the volume is that there is no danger that the other two partners sharing the national power spectrum will be able to perform the functions of sea power in the foreseeable future.

The author has preferred sea power to consist of six as opposed to the three basic elements, Transport, Strength and Bases, now normally accepted. An examination of the constituents of sea power would show that geography is a vital factor in deciding the suitability of bases, that the strength element is largely dependent on industrial capacity and psychological aptitude, which also apply to the transport element to a lesser extent.

Of considerable interest to the professional reader is the future composition of the strength element. Will the submarine replace the carrier as the "prima donna" of the fleet, or will the carrier also be forced to seek refuge in the ocean depths in order to be less vulnerable while at the same time maintaining its all important flexibility that manned vehicles undoubtedly provide. The author has not thrown any light on this aspect of the development of sea power.

The author supports all-round development of the whole range of weapon systems applicable to maritime warfare. The danger here is that it can result in all-round weakness owing to resources never being unlimited.

Though not a classic comparable to the works on sea power by Mahan or Richmond, it is one of considerable interest to the student of maritime warfare.

R.K.K.

The Soul of India by Amaury de Riencourt (Jonathan Cape, London, 1961). 402 pages. Price 25 sh.

Men talk very often of the "verdict of history", but on most points of real interest that verdict is not unanimous and is constantly being reversed. History's verdict is one thing in one country and another in a different country; one thing in India of, shall we say, 1850 and method of historical as of political progress. Historical truth is perpetually being brought to light, not merely by writers of cool and detached temper, but also by the rival contributions of those who ardently espouse opposite sides on some historical cause. If passion is an element of historical truth, sympathy is a necessary part of understanding. It is difficult to set bounds to history's scope. It is concerned with every activity of man. It is more than that, it is the law of motion of men as socially organized entities.

This book has been written to illustrate a thesis, not on the verdict of history, but a particular philosophy of history, that history "has both a cyclical

rhythm and linear tension. . . . What we have to discover is the ground cycle of history, that which takes into account the whole of a particular society's life—its arts, sciences, techniques, religions, philosophies, politics, economics, all of which are intimately connected and interrelated." The application of this philosophy of history results, according to the author, in a "thorough study of the two extremities of Indian history's time-span, the formation and the development of Indian culture and the establishment of Indian civilization before the Christian era, and the convulsion of India under the impact of the West in the past hundred and fifty years." The two thousand and odd years that stand between these two epochs are only briefly surveyed.

In short the book examines the interaction in time of Indian thought with Indian society, analyses the contemporary development of Indian society and thought and throws some light on the shape of things to come.

The ancient Indians were the least interested in history and the key to an understanding of Indian culture lies precisely in this indifference to the process of time. "To the Indian the supreme spiritual reality was a transfiguration of space and not of time, of Nature and not of History. As a form of perception space divides whereas time unites. Space is the domain of separate entities placed side by side, the domain of plurality. Times, on the contrary, is the realm of the unending flow which binds all elements into unity." This explains why the instinctive religion of India was, and still is, polytheistic. This total negation of historical time explains why there is not only no work of history in ancient India but also no genuine biography whatsoever. It is a strange thought that our knowledge of our own country is derived mainly from the travelogues of foreign visitors.

The transition from the buoyant, vital, life-affirming, extroverted Vedic man to the individual, intensely introspective Upanishadic man was the inner manifestation of an outer change from tribal to feudal social order. There is, however, no firm historical basis for the author's assumption that the Aryan barbarians merged with the small upper crust of Harappa society.

However during this period the individual becomes more self-conscious; detaches himself from collective opinion, just as, socially, he escapes from tribal obligations and traditional duties. The fate of the individual and not of society is all that matters.

Since there was no historical consciousness, there was no elimination of past, out-dated, myths and notions, until the most profound philosophy co-existed with the crassest superstitions.

Dialectics were the natural tool of Indian thought. In keeping with the whole temper of Indian culture, which eliminated the process of time in life and society, Indian dialectics were not dynamic but static, in the sense that "The Indian mind did not conceive that the dialectical development in terms of Becoming was creative; it merely uncovered the static Being that is ever there". Since the process of time has no meaning, since history has no goal, every individual is merely re-enacting the same endless part, creating nothing new, making no original contribution to human progress. Belief in transmigration of souls finally robs history of all its tragic but thrilling significance".

In the fourth century BC we see the growth of what the author calls democratic Caesarism, of universal empire and an emperor, Chakravartin. There arose a brilliant school of realistic political scientists of whom the most famous was Kautilya, whose *Arthashastra* was the most penetrating summing

up of all political theories evolved in the frightful times of internecine wars. It is the amoral, unethical cynicism cultivated by this book that gave rise to a plethora of wars waged without principles until at last the Mauryas welded together a really comprehensive nation-state. If politics was the product outside ethics and morality, the only thing that could endure was a universal society and never a universal empire. The events following Ashoka's death were to make this plain.

The collapse of the universal state coincided with the evolution of a new type of social structure that would take over most of the duties left to political administration in other societies. This was the caste system, originally a device for the preservation of racial stratification, which later became the organization of self-governing groups that took over the political functions that normally develop on centralized bureaucracies. "Caste was borne out of a profound spirit of tolerance that has always pervaded India. The problem of amalgamating an infinite variety of races and languages combined with widely different religious customs, cultural traditions and psychological tempers resulting from very different geographical settings and climates, without infringing on their freedom of worship and thought, and without annihilating their distinctive social personalities, could be solved in no other way." It was only when it degenerated into a completely "socialised tyranny" that it bred fissiparous tendencies.

The impact of the West in the shape of the British paramount power, had a three-fold result: firstly it pulled India irrevocably into the stream of history, secondly it gave the country a unified administration, and thirdly it generated in the nineteenth century an astonishing cultural revival spearheaded by Ram-mohan Roy, Ramakrishna, Vivekananda and Dayananda Saraswati. Vivekananda more than the others brought a new dimension of understanding that had been lacking in the Indian consciousness—historical reality. It was indeed a period of cultural summer that laid the foundations of modern India and indirectly shaped India's latter-day political awakening. Strangely enough "the Indian nationalism to come was born in the English language and expressed itself in English, since all the vernaculars were the natural vehicles of local and separate aspirations". English education, too, was to produce an intellectual elite that was to take over the governance of the country.

It was on the arrival of Mahatma Gandhi on the political scene the political activity in the country gained a concrete content and direction. He was the charismatic leader, "the perfect symbol of the times, who was to be the living concrete embodiment of the contradictory emotions that were shaking the immense multitudes of his countrymen." With him both emotional *bhakti* (love) and intellectual *Jnana* (wisdom) were fused with *karma* (action), the discipline of pure selfless action as taught by the Bhagvad Gita.

The author concludes his study of post-independent India on a very depressing note. In all the controversies that are ranging in the country the point that is missed by one and all, according to him, is that political unity is something to be worked at and built up systematically through a massive educational effort. We have become wise to this supreme need and of late have been examining the ways and means of achieving national integration. But time is pressing; will we match our words with deeds? The author is sceptical about it.

He also perceives certain constants in the Indian situation, the inevitable rise of right-wing extremism and the inveterate lack of interest in politics.

Extremism in any form may spell disaster. Mass literacy and political consciousness are likely to maintain a balance between the two polar opposites. That is why there has to be a crash programme of mass education. After all, as we are often reminded in this book, democratic institutions at the grass roots and varieties of socialist economy have been constant features in our country's chequered history. A secure, progressive future therefore lies only along the path of the golden mean.

M.J.R.

The Crowded Sky by Hank Searles, (Heinemann, London, 1960). 267 pages.
Price 16 sh.

This book presents a powerful drama of human emotions at 20,000 ft. When one looks at men who fly aeroplanes, one wonders how they feel and what they think of while they are flying. Hank Searles unfolds the mystery of the thoughts of pilots and ground control men, and how these colour the operating of their machines.

Dick Barnett is a veteran in the art of flying and allows himself mild variations to the instructions that he has been given. The thought of why he is being "grounded" is gnawing at the back of his mind. Mike Ruble, the co-pilot, is a young man with artistic inclinations, who believes in strict adherence to the altitude assigned to the flight. Commander Heath is the pilot of the Navy jet which was fated to have a mid-air collision with a passenger flight. He has arrived at a crisis in his married life. Being tricked into marrying a beautiful woman, who he discovers has been unfaithful to him, he is contemplating marrying someone with whom his very soul can commune. He is so keen on a lunch engagement with the woman he loves, that he takes off with a radio which is giving him trouble. On the ground, traffic controller, Norm Coster is a harassed man. It is a night when there is unusually heavy traffic in the air and on the other hand, his wife is delivering a baby any moment.

Hank Searles has handled the plot admirably. The thread of the plot is never lost. In spite of the fact that so many technical details have to be given, the interest never flags.

I.A.

The Near East in History: A 500 Year Story by Philip K. Hitti (D. Van Nostrand Company, Princeton, 1961) 574 pages,

At the mouth of the Dog River on the Lebanese Coast there survives to this day a multilingual series of inscriptions memorializing the passage, among others, of the Egyptian Pharaoh Ramses, the Assyrian invader, Esarhaddon, the Neo-Babylonian empire-builder Nebuchadnezzar and the Roman Emperor Marcus Aurelius. Nothing could bear out more irrefutably the strategic importance of the Near East throughout recorded history. But the story of the Near East is not merely a story of wars and imperial splendour. The Near East has also been the cradle of three great world religions: Judaism, Christianity and Islam. In modern times the opening of the Suez Canal and the discovery of vast quantities of oil (two-thirds of the world's proven reserves) lent new dimensions to the position of the Near East in world affairs. All this, and much more, forms the theme of the study under review.

Philip K. Hitti has already earned renown as the author of the *History of the Arabs*, *History of Syria and Lebanon in History*. *The Near East in History*,

the latest in the series, however, belongs to a different genre and is admittedly meant for the non-specialist. It is an exceedingly readable account—unencumbered by endless chronologies of events or geneological tables of dynasties—of the five-thousand-year story of that bewildering kaleidoscope of races, religions, cultures, languages and empires: the Near East.

The six parts of the book deal respectively with the pre-literary Age, Ancient Semitic Times, the Graeco-Roman Age, the Islamic Age, the Ottomans and the Persians and the modern Arab States. Beginning with the food-gathering man of the prehistoric times the narrator of the story takes the reader down to events as contemporary as the Lebanese Civil War of 1958. This long and arduous journey is made bearable, even enjoyable, by his stimulating observations and narration of delightful anecdotes.

In Hitti's own words his study tries to bring out the high-water marks in the career of the Near Eastern peoples, their contribution to the progress of mankind and their contacts with the rest of the world, particularly the West. This last qualification adds to the value of the book in one sense but considerably diminishes it in another. The author who was born in Lebanon and became a naturalized American citizen in his young days, takes great pains to show that the Near East "comes closest to us ethnically, historically, culturally and geographically". This is no doubt partly true. The Near East is geographically closer to Europe than the rest of the "East". But neither geography nor history would bear out the thesis that in the course of the past five thousand years the Near East was not as intimately connected with the East as it was with the West. On the contrary, during certain periods—the late pre-Islamic and the early Islamic, for instance—the Near East had closer commercial links with India and China than with the West. The present misconception is, probably the result of the present generation's excessive preoccupation with the history of the immediate past. Apart from this flaw the reader will find the study of this book highly instructive and rewarding.

M.S.A.

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To the Editor of the USI Journal

AFTER PARADE HOURS

I

Dear Sir,

I read Troop Leader's letter, published in the USI Journal, Jan.-Mar. 1962, with more than casual interest. Several of my friends (surprisingly enough including a naval officer) wrote to me, also questioning my rejection of intensive training as a means of improving the effectiveness of armour at night.

I would be grateful if I may be given an opportunity to elaborate this aspect of my article entitled "The use of Armour After Parade Hours" published in the USI Journal, Jul.—Sep. 1961.

The aim of that article was to establish that:

- (a) In the past, Armour has mainly been used at night by being deployed at night i.e. brought into favourable positions at night for subsequent employment during the day; historical examples were given;
- (b) such deployment at night is a good thing but not the same as employment at night i.e. the direct use of tanks at night in an operation of war, the aims of deployment and employment are quite different;
- (c) attempts to train for the effective employment of tanks at night should for the present, avoid experiments with radar, infra-red equipment and artificial moonlight for the reasons given;
- (d) training on the lines I suggested (and the suggestions were by no means novel) is the best practical approach to increasing the effective employment, as opposed to deployment of tanks at night.

I agree with Troop Leader that tanks cannot carry out fire and movement at night. Incidentally, nor can infantry; so this handicap should not cause undue alarm and despondency. Nevertheless, darkness has seldom prevented movement or fire.

I know that armoured units do individual and collective training at night, mainly for the deployment of armour. Such training is essential but should not be confused with our search for new methods to train for the more effective employment, as opposed to deployment, of tanks at night.

I accept that armoured units also do limited training for the employment of tank fire at night, but I recommended that our present limited employment at night should and could be increased.

Troop Leader would appear to agree with me upto this point at which stage he coyly asks "But how?" And when I urge him to carry out training with relatively cheap, new (actually very old) techniques which may increase his effectiveness, he at once protests that this is "complicated and suicidal" without attempting a trial.

Then, as if to dispel any misconceptions about his desire to work after parade hours, Troop Leader assures us that he is in favour of intensive night

training and takes me to task for having declared that intensive training will not solve the problem. He has apparently misunderstood the problem.

I am all in favour of intensive training to achieve a desired aim. I have no doubt that intensive night training with existing equipment and techniques will improve the Armoured Corps' ability to deploy and fire on targets using star-shells at night. But I wrote that article precisely because I am not satisfied with this limited role. We can never, of course, expect that tanks can be as fully effective at night as they are by day; the aim, therefore, is to acquire more effective employment than is possible with present equipment and techniques.

To insist that an intensification of night training on the present lines will by itself, somehow, increase the effective employment of tanks to the extent desired, is as fallacious as expecting that more intensive infantry bayonet training will, somehow, enable a battalion to improve its range classification results.

Once the aim is clear then it is obvious that the answer is not intensification but re-orientation of training; not deployment but employment with the aid of new techniques; not only star-shells but every other device we can produce in India to enable tanks to move on to and fire from bounds at night with greater efficiency than we can acquire by using present equipment and techniques--no matter how much we train.

Armoured Corps officers show considerable ability, drive and initiative in acquiring the things they want. If the experiments suggested are not carried out, this will probably be because of one of three reasons:

- (a) They may plead a lack of suitable equipment, which in fact is as readily available in India as polosticks; thus, this plea should be accepted as an admission that they lack the desire to experiment.

or

- (b) They may claim that the scheme is impractical without giving it a trial. This excuse would display laziness or a deep-rooted prejudice.

or

- (c) They may begin carrying out intensive night training on the same old lines; an attitude which betrays either a genuine lack of commonsense or a desire to hoodwink the public.

I know how tedious and difficult this business of night harbour, changing bogey-wheels in the dark and topping-up petrol can be. But all this sweat, though a very important part of deployment, has little to do with the problem of increasing the effective employment of tanks at night.

Troop Leader's formidable catalogue of routine hardships seemed familiarly like the arguments brought forward by all well-organised unions who voice legitimate statistics to impress us with their present performance whenever the subject under discussion is how to increase production.

Discriminating readers are advised not to be distracted from the aim by such specialist mumbo-jumbo.

M & G Area Office Mess,
Colaba,
Bombay-5.

Lt Col (E.A. VAS)

II

Sir,

With "Troop Leader's" rejoinder to "Use of Armour after parade hours" (USI Journals of Jan—Mar 62 and July—Sep. 61 respectively) a dense fog of war appears to have settled down upon the *corpus delicti* of Armour.

The main limitation of Armour—politely never brought out in the best in text books—is reflected in its role of "Striking a decisive blow."

By contrast Armour's nearest equivalent in tactics, the Navy, has, in the words of Admiral Fisher, the means and ability to: "Hit first! Hit hard! Keep on hitting!" The problem of Armour is to keep on hitting. As "Troop Leader" points out in all innocence—present day Armour cannot do this.

The following is the requirement for sustained action by Armour and all of it is or soon will be feasible with contemporary technology:

Aspect	Present position	Future requirement
(a) Mechanical reliability	(i) The reciprocating internal combustion engine is of all contrivances ever devised by man, easily the most inefficient with too many moving parts susceptible of wear and goes out of adjustment too often and too easily.	Even diesel cannot take the continued strain but is a good interim improvement. A jet engine as evolved by the Rover Company is an improvement though carriage of fuel then becomes the problem.
	(ii) Suspension and tracks	Other possibilities are: rocket fuels—these are sophisticated—and atomic energy, if giant tanks are contemplated. Air suspension and improved tensile strength and tolerances of metals for greater resilience, longer life and less maintenance.
(b) Maintenance	3 to 4 hours per 24 hours	Sealed for 5-10,000 miles.
(c) Armour	All thickness of types of armour including spaced and aluminium alloy are vulnerable to cheap, accurate weapons.	Use of ground and employment in the support role provide the only answer. Tanks afford protection against nuclear effects.
(d) Fire power	Bigger and better guns with less and less ammunition posing problems of Armoured protection and engine horse power.	The Armoured Regiment must become a mobile missile centre, the role of sabre squadron being to "guide-on" these missiles, jam enemy anti-tank devices and counter enemy Infantry.

Aspect	Present position	Future requirement
(e) Flexibility or Mobility or Cross country or Performance or Sustained action or Maximum utilisation (under Trade Union rules and hours!)	As above and in the articles—letters quoted in the USI See Rommel's views stated in Victory in Africa (Infantry Jour- nal of Apr 62).	Armour must become three-dimensional. Heli- copters are just like periscopes and powered binoculars to Armour. Same tanks must have "clip-on" helicopters or "Hovercraft" ability to cross rivers. Ammunition fuel and supply echelons for immediate re-supply must be as mobile as the sabre squadrons they support.

Given all the above, the new missile, flying tankmen will still have to dig—Troop Leader is right there—so why not start an experimental integrated Regiment with Armour, as above; Artillery, if any Master Gunner can rise to the science and occasion of Rocketry and a modern concept of Infantry who as usual have the last word *and must be the last word* to match it all.

"IRREGULAR"

GUERRILLAS AND FRATERNIZATION

Sir,—I have read with interest the instructive article on "Fighting the Guerrillas" by Major R. D. Palsokar, M.C., in the October-December 1961 issue of your esteemed journal.

The author advocates 'fraternization' by the ranks of any army engaged in anti-guerilla operations with the people of that part of the country with the dual aim of fostering the feeling of amiability and co-operation with the populace and of collection of intelligence. I am not inclined to agree with this view.

It is agreed that anti-guerilla operations are intimately associated with the indigenous population of the country associated with the indigenous population of the country inasmuch as countering the guerillas is as much a political and economic problem as a military one. Friendly relations with the inhabitants must be maintained so as to gain their confidence and goodwill. But to call it "fraternization" is not correct.

Three questions pertaining to this subject which need elucidation are: (a) What does 'fraternization' involve? (b) What should be its 'modus operandi'? (c) Does it not conflict with the security aspect of our operations, beyond a certain limit? If so, what is that limit? Fraternization will indubitably be a double-edged weapon. It will certainly facilitate collection of information regarding hostiles. Alongside, it will also render leakage of our classified information relatively easy.

To collect information, it is not safe to resort to this method. Instead, I would rather advocate clandestine means in the form of special civilian

agents who will infiltrate among the guerilla forces and their sympathisers. To preclude the possibility of 'alienation' of the army, I would recommend the following measures: (a) Propaganda by quasi-military organisations as suggested by the author. (b) Fair and impartial behaviour of troops at all times. This shall call for enforcement of the strictest discipline and education of troops. (c) Publicity of statements on the object and guiding policy of the operations by top national leaders and civilian administrators.

Signals,
Assam Rifles,
Shillong

Captain J. BAGCHI

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| BAHL, Captain V. S., Artillery (Life). | JAGOTA, Captain S. C., E.M.E. |
| BAHUGUNA, Major S. R., The Kumaon Regiment (Life). | JAKHALU, 2/Lieut. SUHOI, I., 110 Infantry Battalion. |
| BANERJEE, Major P., Engineers. | JERATH, Captain P. C., Artillery. |
| BEDI, 2/Lieut. V., E.M.E. | JERATH, 2/Lieut. T. P., The Sikh Light Infantry. |
| BHATIA, 2/Lieut. B., Engineers. | JOLLY, Captain P. S., A.S.C. (Life). |
| BHATIA, 2/Lieut. HANS RAJ, Artillery. | KHANDEKAR, Captain A. N., Artillery (Life). |
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| BINDRA, Captain J. S. | KHOSLA, Captain S. K., Artillery. |
| BIR INDER SINGH GREWAL, 2/Lieut., The Madras Regiment. | KUMAR, Captain JITENDRA, The Madras Regiment. |
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| CHARI, 2/Lieut. C. T., Engineers. | LAROLA, Captain B. K., Engineers. |
| CHAUDHARY, Captain M. S., The Punjab Regiment. | MANN, Major M. P. S., The Guards. |
| CHHABRA, Captain I. M., Signals. | MANSOOR YAR KHAN, Major, The Parachute Regiment. |
| COLABAVALA, Major R. D., The Guards. | MARWAHA, Captain M. M., The Dogra Regiment. |
| DALAL, Captain K. S., The Jat Regiment. | MEHTA, Major K. K., Engineers. |
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I would like to thank all those members who paid their subscription so promptly at the beginning of the year.

To those of you who have not yet paid, may I remind you that your subscription was due on the 1st January. Would you please, therefore, put a cheque in the post to me TODAY. There are some members who have also to pay their subscription for 1961. They are requested to make the payment for both the years to avoid unnecessary reminders.

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EDITORIAL

SCIENCE IN AID OF DEFENCE

The high place of science and technology in defence was highlighted by the recent constitution of the Defence Research and Development Council. This is a logical extension of the organisation which was formed early in 1958 by the amalgamation of the technical development establishments of the three Services and the Defence Science organisation. That the scientists have had an important role to play in every one of the different facets of defence requirements has been emphasised since India attained Independence, and there has been a gradual build-up of the organisational set-up for defence science with its own complement of laboratories and technical establishments. Two organisations have emerged, one for Production and one for Research and Development, dealing with such functions as the research, development and investigation in relation to equipments inclusive of armaments and explosives, food and clothing; production and inspection related to the quality and supply of equipment to the services; work pertaining to shaping of Defence strategy in the context of weapons systems, fighting potential and their efficacy; and physiological and psychological studies for obtaining optimum efficiency in the Armed Forces.

The Defence Research and Development Council is an autonomous body working in cooperation with the Council of Scientific and Industrial Research and establishing liaison with the research laboratories and technical establishments with due regard for security considerations. While rapid progress is usually made in scientific research ironically enough during wartime, one should not ignore the fact that the growth of science is a continuous process. This is evidenced by the invention of a new computer recently by an Air Force officer which makes the solution of several tactical prob-

blems a matter of seconds. The task of a navigator on board a modern military aircraft is not confined only to helping the pilot fly from one place to another or to pin-pointing the position of the aircraft during flight at any given time. In addition, he has to, amongst other things, calculate the radius of action of the aircraft, i.e., the farthest distance that the particular type of aircraft can go upto, execute its role and return safely to its base; calculate and give changes in speed to his pilot which will enable the aircraft to reach its destination at the exact time assigned to it; calculate the speed, height and course of his own aircraft and that of the intruding one, and help his pilot to intercept the intruder; and determine the point of no return, that is the point from which, due to weather and fuel considerations, it is safer for the aircraft to fly to its destination rather than to turn back and try to make it for the base. The navigator upto now had to solve all these problems by the graphic method and by going through laborious calculations, consuming minutes that are so precious in present day high-speed aircraft. The computer has been adopted as standard equipment by the Air Force.

The harnessing of science to the development of newer and more fierce weapons of destruction over the last few decades has placed immense power in the hands of man, who has almost attained a capacity to destroy civilization and mankind in a matter of minutes. We in India, although opposed to war and determined to refrain from developing nuclear weapons, must of necessity keep pace with the broad lines of development in the field of armaments in order to organize effective national defence. The Defence Research and Development Council, which will, among other things, coordinate and direct scientific and technological research for the development of contemporary weapons and equipment, is a major step in the right direction.

UNITED NATIONS FORCE IN THE CONGO

By Brigadier I. J. RIKHYE

Military Adviser to the UN Secretary-General

IT is a great privilege to have been asked to speak to the members of this august Institution. I propose to talk about the UN force in the Congo, the strategy and tactics evolved and the problems which confronted it.

The rough area of the Congo is about two-thirds the size of India. The total population is about 40 million. Congo lies in a saucer-shaped plateau which rises to a maximum height of 2,400 ft. with a basin 1,000 ft. high. The River Congo and many of its tributaries rise in the south of the high plateau of Central Africa. Along the eastern borders there are a number of lakes which are the source of most of the water supply to the Congo River. Congo is divided into six provinces—Orientale, Equateur, Kivu, Katanga, Kasai and Leopoldville.

To save time, I have already distributed certain information to you. Tables I and II* show the higher command and control set up of the UN operations in the Congo. The recent change in Katanga, where an Area Headquarters under a Major-General has been established, is also shown. At the end we have given the distribution of troops and the various units which are serving in the Congo.

FORCE COMMANDER

Force Headquarters is called HQ ONUC (Organisation Nations Unies Congo) and is located at Leopoldville, the capital of the Republic. It is generally organised along USA staff lines. The Force Commander has a small personal staff consisting of a military assistant, two ADCs, two secretaries and orderlies. All instructions from the Secretary-General or his Special Representative are issued by name to the Force Commander. These are kept in his office for security reasons and shown to his staff in accordance with such instructions as he may give. The Force Commander is responsible to the Secretary-General for operations, logistics, and general discipline of the Force. All units and personnel in the Force are directly under his command. National commanders are responsible for personnel matters and liaison with their countries. The Force Commander is personally responsible for co-ordinating the conduct of military operations with his civil counterpart. Most of the co-ordination takes place with the Secretary-General's representative, the Chief of Civilian operations and the Chief Administrative Officer also being present.

TROOPS DISTRIBUTION

Combat troops are allotted to provinces in accordance with current needs:

- (a) Equateur has been quiet for several months and therefore no troops are kept there. Orientale was very disturbed a few months ago but, since the situation has improved, only one battalion is kept at Stanleyville for the present.

* Please see pages 216 and 217.

HIGHER COMMAND AND CONTROL OF THE UN OPERATIONS IN CONGO

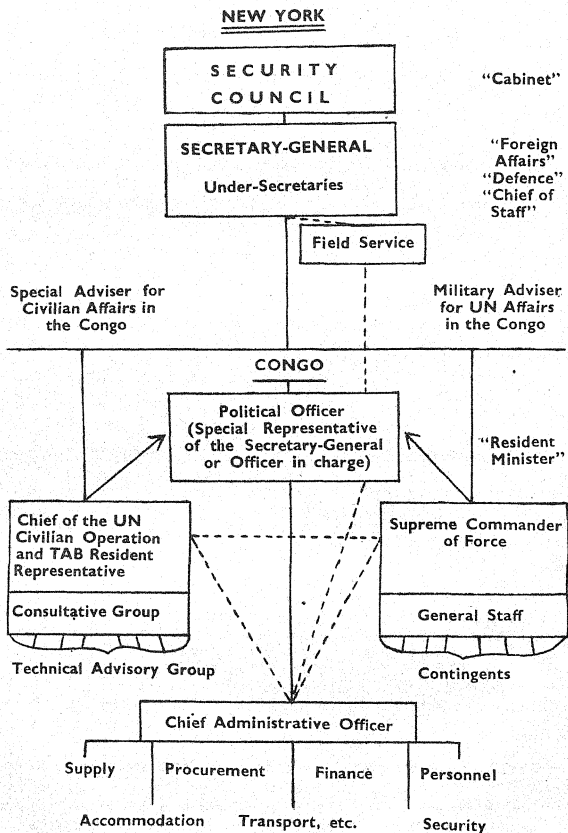


TABLE I

UNITED NATIONS OPERATIONS IN THE CONGO

(ONUC)

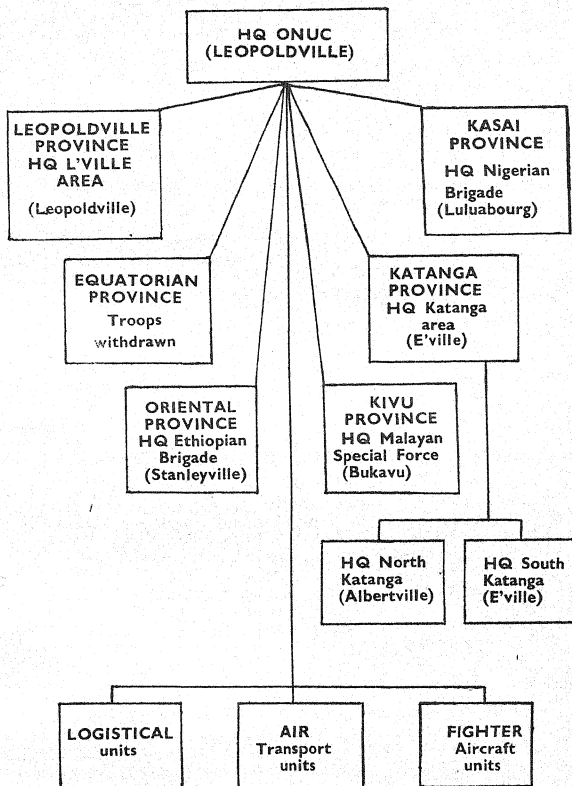


TABLE II

- (b) Kivu borders with Ruanda Urundi where trouble has been brewing for the past year; the Congolese Nationalist Army (ANC) has had clashes with Belgian troops guarding this UN trust territory. UN troops have had to be kept to interpose between forces of the Trust Territory and the Congo.
- (c) When the ANC recently moved into North Katanga, UN forces had to be reinforced in that area to ensure law and order and prevent civil war between them and the Katanga forces. A large UN troop concentration at Elisabethville is essential to dominate the capital of secessionist Katanga, and for any future operations if present negotiations fail.
- (d) Kamina Base, which is many times the size of Babina, has to be maintained and held secure to enable ONUC fighters to operate from there in order to maintain mastery over Katanga air space.
- (e) A battalion is kept in Kasai to act as a "fire brigade" wherever tribal fighting breaks out.
- (f) Lastly, some troops have to be retained in Leopoldville for essential guard duties and protection of personnel, and to ensure the security at all times of the main airfield (Ndjili airport) on which the UN operations are based in the Congo.

COMMUNICATIONS

A high-powered radio network connects all the provincial capitals and important military locations, like Kindu, Kamina and Kitona Base, with HQ ONUC at Leopoldville. Communications within provinces are generally provided by the contingents deployed in that area with the exception of Katanga where an Indian Signal Regiment is deployed to provide communications between the three sectors into which Katanga Area has now been sub-divided.

As all movement was only by air at the start of the UN operations in the Congo, administrative units were deployed at the main airfields. Gradually, as the UN was able to restore surface communications, additional administrative units were deployed, so that surface communications, which are more economical, could also be used to support the Force. Matadi, the Congo's one and only port, was the main surface point of entry; Leopoldville being connected to it by rail and road, the main depots and logistical installations are located there. River transport is used beyond Leopoldville, up to Stanleyville in the north and Port Franqui towards the east. Thereafter, railway and river transport was used to supply troops in Kivu and Katanga. Various separatist movements caused dislocation of surface traffic, obliging the UN again to rely mainly on air supply.

ONUC has slowly built up a sizable Air Force of 65 planes of different kinds and often has to use anything up to 35 planes chartered from commercial companies. In March 1961 the use of Matadi was denied to the UN. Arrangements had then to be made to use Dar-es-Salaam and Mombasa as alternatives. This coincided with the move of the first Indian Combat troops into the Congo. Even after Matadi was again made available to ONUC, it was decided to continue to use the East African ports for the rotation of Asian contingents.

SUPPLIES AIRLIFT

The administration of ONUC is the responsibility of Field Service Operations with Headquarters at New York. They obtain supplies and equipment on a worldwide basis and generally use commercial carriers to transport them to the Congo. Military stores and emergency supplies are usually airlifted into the Congo by the USAF. Air rotation of troops is also done by the USAF and sea rotation by the US Navy. A normal maintenance air freight arrangement exists between Europe and the Congo, the aircraft belonging to the RCAF. In ONUC the Chief Administrative Officer is responsible for all administrative aspects of the UN in the Congo. In the case of the UN Force, he deals directly with the Commander and the staff concerned. Experience has proved that administration in the field improves with the degree of good relations that exists between the UN administrative staff and the military logistics personnel.

Broad UN strategy of the use of the UN Force in the Congo is based on control of important airfields and the physical presence of troops in disturbed areas. The UN Force is used in a police role, its main task being prevention of a breakdown in, instead of enforcing, law and order. Therefore, it is always hoped that, where UN troops are present or where UN troops interpose, the quarrelling parties would decide not to resort to force so as to avoid a conflict with the UN Force itself. This concept was developed in the Gaza strip in Egypt and introduced in the Congo.

SELF-DEFENCE

The participation of splintered groups of the ANC in support of various separatist movements, however, forced a new development in the use of the UN Force. Congolese leaders and troops had little notion of the role of the United Nations and of the consequence of attacks on UN personnel. They have often resorted to the use of force. While every effort was made to educate the Congolese in the role of the UN, it was found necessary to exercise the right of self-defence. The principle of self-defence has been fully described in an instruction issued by the Force Commander, and I would suggest that all officers interested in the Congo Operation should study this document. Briefly, the right of self-defence may be exercised when any life or property is in danger by—

- (a) occupying important centres of communications or vulnerable points thus denying their use to the quarrelling parties;
- (b) establishing cease-fire lines or neutral zones even on a unilateral basis.

Usually UN troops are deployed in such areas or, alternatively, observers are established. The right of self-defence has a fairly wide use, which has been developed as different situations arose in the Congo.

UN STRATEGY

The broad tactics, on which deployment of UN troops is based in the Congo, are that UN detachments should be sufficient in size so that they cannot be overpowered by indisciplined bands of the Congolese Army or any aggressive tribal element. Experience has shown that a detachment should not be less than a company of infantry. It has also been found necessary to have a ready reserve company size which can rapidly be airlifted wherever disturbances occur. Small transport aircraft, like the Otter, Dakota and also helicopters

are used for such airlifts to take advantage of hundreds of small airfields which exist all over the Congo. Initially, smartly turned out troops with their weapons bristling would act as a sufficient deterrent but, with the increasing participation of mutinous bands of the ANC in disrupting law and order, UN troops had to resort to normal battle practices.

Action against mercenaries in Katanga resulted in fierce fighting during September 1961. UN troops, deployed to arrest mercenaries and prevent the use of radio and telegraph facilities by them in Elisabethville, hardly expected the ferocity of attacks against them by mercenary-led Katanga troops. This proved an object lesson and thenceforth the UN troops in Katanga had to be placed on a normal war basis. Thanks to the acceptance of this concept by HQ United Nations and the diplomats in New York, UN troops when attacked in December 1961 by Katangese troops were not only able to hold their own but succeeded in totally disintegrating Tshombe's forces.

AIR WAR

Operations in Katanga brought out a new factor—the air war. Katanga forces had already been using light aircraft to drop small bombs against Baluba tribesmen in North Katanga. During the September 1961 operations, Katanga employed Fuga jet trainer aircraft—fitted with machine guns and carrying small bombs—to attack UN troops, airfields and other installations. In fact, one single Fuga succeeded in preventing the relief of the treacherously imprisoned UN Irish Company at Jadotville. The UN force therefore had to be equipped with jet fighters which were assembled within a few weeks and since then have been masters of the air over Katanga.

It may appear clear from the organisation, strategy and tactics that no functional difficulties in the employment of the UN Force in the Congo should arise. In practice, however, it has been found that the success or failure of this system depends largely upon the personalities concerned, particularly upon the ability of the Secretary-General, his Representative in the Congo, and the Force Commander.

NOT UNUSUAL

From the Force Commander's point of view, the UNO may appear somewhat odd, and more so if he is without previous UN experience; the Force Commander may be critical of delays in decisions and inadequate delegation of powers to decide and interpret; he may not like to be shackled to the Special Representative of the Secretary-General. When compared, however, with national government organizations, it should be clear that the UN organization is almost identical and, in fact, more simple and compact. It is quite common in countries to appoint Resident Ministers in areas of operations who represent the Government and guide their Theatre Military Commander. The apparent delays are no more or less than would be experienced under similar circumstances by, say, a national government when it is realized that before any decision is given, the ramifications of any projected action must be gone into carefully, in the light of political, legal and other relevant implications. Theoretically, the question of delegation of power should not arise at all if the Special Representative were to be looked upon as a projection of the Secretary-General over the intervening distance.

A Chief Civilian Officer who is a Political Officer is accredited to each of the six provinces in the Congo, and he works in close co-operation and co-

ordination with his military counterpart who is the Senior Military Commander in that province. Even though the responsibility for implementing the mandate is given to the Force by the Security Council, and its correct interpretation is the responsibility of the Secretary-General and his Special Representative and its military execution the responsibility of the Force Commander, a great deal has to be left to the initiative of the Political and Military Officers in the field. This is not entirely satisfactory from the point of view of the Force Commander, who would prefer to exercise control over every facet of the activities of his troops, but an adaptation has to be accepted simply because the time factor and/or the state of communications do not always permit of a reference being made to superior headquarters. However, the initiative of the political and military representatives in the provinces must always be limited to the mandate and its basic interpretation as enunciated by the Secretary-General.

NEW PRECEDENTS

While on the question of interpretation of the mandate by the Security Council to the Force, the Force Commander has good reason to complain over a lack of clear enunciation on certain important issues. This, again, can be explained on the basis that the United Nations was faced with certain situations which had no precedence. As these new situations arose, new solutions were evolved and new precedences created making fresh contributions to international law and practice. There were three such important occasions which had a serious influence on the operations of the Force. First, to what extent can the UN Force interfere in the internal affairs of the Congo and its mandate of providing assistance to the Congolese Government for law and order? In fact, UN troops found themselves interfering more and more in areas which would normally be straightforward police functions. In the end, UN troops carried the full responsibility of policemen, yet without the legal authority usually provided to an officer of the law by governmental and civic procedures.

The second instance is concerning the use of force for self-defence. The task of the UN Force in the Congo is to assist the Congolese and therefore, when attacked by the very people whom the Force is there to assist, UN troops have to exercise great restraint and use minimum force. The Force Commander found his troops being killed and wounded by superior weapons, larger numbers, and in several instances, cruelly hacked to pieces. The Force Commander naturally would desire sufficient defence potential for his troops. His superiors, however, constantly tried to prevent an armaments race in the Congo, and in any way create the impression, not only amongst the Congolese but also amongst member nations of the UN, that the UN Force was gradually being converted into a purely military force for waging war against the Congolese and for military occupation of the Congo. Events have, however, forced the UN into improving weapons support for its Force and, as already mentioned, adding fighter aircraft in its armoury. Meanwhile, the Force casualties are a little over 100 killed and about 130 wounded.

MUTINEERS OF ANC

The third and possibly the most important issue has been the Congolese National Army—The ANC. Although not the cause of the Congolese crisis, the former Force Publique certainly was the main instrument of chaos. Once the Belgian Army had withdrawn, UN troops should have been able to devote their efforts to assisting the Congolese Security Forces in re-establishing law and order. In fact, the Congolese National Army, first as a whole and later in

1960 in splinter groups and more recently in Katanga, became the most important single factor creating lawlessness. In view of the UN's mandate, the UN Force in the Congo has to assist the Congolese Security Forces in reorganisation and therefore is not able, nor has it ever had sufficient political backing, to disarm mutinous, indisciplined, leaderless bands of the ANC. Therefore, the Force Commander is constantly faced with the possibility of a sudden eruption wherever elements of the National Army are located. He must continue to face the stark fact that, even where there is apparent friendship, treachery can break out without any warning and all at once.

During the September and December 1961 fighting in Katanga, all attacks against the UN troops were led by men of European origin. Of course, these are the men the UN is trying to expel. Officers of Katangese origin on their own did not take any initiative against the UN and in fact were generally friendly. The UN resolved to remove foreign officers and mercenaries from all groups of the Congolese National Army. There are no foreigners serving with the Leopoldville and Stanleyville Groups; the absence of such a cadre has reduced their effectiveness and Katanga, therefore, has an unfair advantage over the rest of the Congolese National Army and can continue to flout the authority of Leopoldville. If foreigners are not removed from the Katangese Gendarmerie in good time, the main part of the Congolese National Army would be tempted to hire foreigners as well and would then be able to wage war against Katanga.

ABETMENT FROM OUTSIDE

The UN resolution is intended to prevent civil war and the inevitable chaos that would follow. Yet some of the countries which voted for this resolution have not taken sufficient steps to prevent recruiting and movement of such personnel in their countries or through their territory — that not being enough, there are some who have even actively assisted by permitting use of their territory to men actively engaged in waging war against the UN. Since the Force can only operate within the territory of the Congo, its Commander on his own is unable to check the flow of reinforcements into Katanga from some neighbouring areas.

HOW UN FORCE WAS SET UP

The manner in which the Force was set up is absolutely contrary to all military concepts. Units began to arrive in the Congo on July 15, 1960. The first Force Commander only arrived on July 18, 1960. During the interim period, Dr. Ralph Bunche, who happened to be at the Congolese Independence celebrations and was later named the Secretary-General's Special Representative in the Congo, was also appointed Force Commander. There was no staff in the field and none in New York. Maj.-Gen. Von Horn, the first Force Commander, brought a team of ten Observers, picked hurriedly from his Middle East assignment, to assist him—they became the staff. As yet there were no signal communications; no logistical units; in fact, not even an office; and ONUC operated from a hotel room which also housed many of the guests who had come to attend the Congolese independence celebrations. This state of affairs continued for some time till, towards the end of July 1960, a separate office was set up, local telephones were provided and communications with troops in the provinces were established through an outmoded civil telephone system, and through the courtesy of large business interests who had private radio communications to their plantations and factories.

At Headquarters United Nations, the Secretary-General's Executive Office and Field Service did all they could to support the Force. Fortunately, they had a fund of experience as already many of them had helped to set up operations in Lebanon, UNEF, etc. It took a few months to find staff officers, logistical units, aeroplanes, pilots, ground staff, radio equipment and so on to place the Force on some reasonable basis. It will be clear from all that I have said that a Force Commander would have plenty to "gripe" about.

WIDE VARIETY

A force consisting of many nationalities, races, and a wide diversity of customs and habits, languages, organization, equipment and operating procedures, is very difficult to weld together, more so when units on arrival were flown straight into areas for operations. At one time the Force had as many as 29 countries represented from all corners of the globe. Even at Headquarters ONUC, where staff and liaison officers from contributing countries are present, the task of instilling an adequate measure of *esprit-de-corps* and cohesion is almost impossible. Due to lack of facilities, it has not been possible to have an officers' mess or even a club. A Headquarters like ONUC is inevitably swollen as there must be geographical representation. Due to largeness, many of its personnel remain unacquainted with each other and, due to a system of rotation which varies from six months to a year, there is an unending stream of personnel arriving from and returning to their countries.

DIFFICULT TASK

Geopolitical considerations which restrict selection of capable senior staff for the Force Commander have had adverse effect on the functioning of the Headquarters. As already indicated, a necessary inflated staff to compensate for the inevitable "passengers" that must be carried for equitable representation on geopolitical grounds was required. Till recently the Force Commander in the Congo never really had a proper Chief of Staff. You would all appreciate, more than any other group of people, the impact of the absence of such an officer on the functional ability of a Headquarters. Napoleon had said: "War is an art which all but consists of execution. An important step to achieve effective execution of plans is good staff work".

The Force Commander has to insulate troops from influences from the policy of their national countries which at times, either in substance or in spirit or both, have run contrary to the Security Council mandate under which the Force operates. Equally, the Force Commander has to protect himself against political influences of the great and small powers. Many of them have their embassies or consulates in Leopoldville and the Force Commander does not escape their attention. He too must please his 100-odd customers!

LOGISTICAL SERVICES

The logistical support for the Force creates enormous problems. As indicated earlier, troops reached the Congo before logistical services could be organised, and had to depend on local resources which were rapidly marshalled. As it did not prove easy to obtain the services of logistic units, especially technical ones, from many of the African and Asian countries, it was quicker and more economical to develop the local services and agencies. This also

suited the aims of the UN as revival of local agencies was one of their primary objectives. These agencies, however, cannot be fully relied upon due to the exodus of their European technicians, unsettled and insecure conditions, political influences and uncooperative and even intransigent attitude of the local authorities. Gradually, therefore, more and more reliance had to be placed upon UN air transportation which more often than not remained inadequate and thereby restricted the mobility and freedom of movement of the Force and, indeed, necessitated a much larger force than would otherwise have been required.

SUPPLIES PROBLEM

The complex problems of providing and procuring provisions of different types of food, ammunition, spare parts, and even aviation fuel, are enormous. To do this, the UN has mainly relied on commercial shipping and military air transport, mostly from the US. But obviously, these arrangements are unsatisfactory from the Force Commander's point of view when he has to rely on others, and is not in a position to exercise direct control on his transport agencies. Limited availability placed serious restrictions on movement and redeployment of troops with consequent adverse affect on the course of operations.

Having described the main problems which faced the UN Force Commander in the Congo, it would be unfair if I were to omit points on the credit side of the Force. The Force has carried out the mandate given by the Security Council. It has achieved its tasks. Only the Katanga secession remains unresolved. The present talks in Leopoldville seem to be going well for the future reunification of the Congo. Once the country is reunified, it should be possible to reduce the UN Force.

CONGO SAVED

Perhaps, from a historical point of view, the most important achievement will prove to be that by its presence and regulating activity, the UN Force has so far prevented the Congo situation from developing into an active struggle in the Congo between East and West. Also, if the Congo has not altogether disintegrated, it is because of the presence of the UN Force.

Finally, as regards the future, we should learn from and take note of our experiences in the Congo, and give them serious consideration when called upon to deal with similar situations elsewhere. Although many helped to create the concept of a force like UNEF and ONUC, they are very much the brain children of that great inventive genius and international servant—Dag Hammarskjöld—who is no longer with us. He, through years, had gained skill and knowledge of handling such instruments. Such expertise must, however, be raised from individual to institutional level. The Secretariat should include military experts on a permanent basis. This step alone could prepare it for the tasks that lie ahead. There is also a lesson for those countries which may like to contribute to an international force. While there is no voodoo about it, troops need specialised training for a UN assignment. It would save lives, improve execution and conduct of operations and reduce expenditure.

CHINESE POLITICAL AND MILITARY THINKING ON GUERILLA WARFARE

By Maj.-General D. SOM DUTT

A DISCUSSION on the subject of political and military thinking on guerilla warfare in one short article means that only the surface can be scratched. This article compresses the subject into a background of reasons which have led to a certain line of political thought, followed by military concepts that have arisen out of such thought. The latter has been put in the form of a terse hypothetical directive.

All Chinese leaders, including the acknowledged master of guerilla warfare, Mao Tse-tung, think nostalgically of the days of the Long March. Planned in 1923, four armies carried out this march with the objectives of destroying the war lords of the North, ousting Japanese imperialism and creating a democratic form of government. It was Sun Yet Sen who had originally proclaimed that salvation lay only in having a people's army to carry out these aims, which were the common objectives of both the Communists and the Kuomintang.

BREAK WITH KUOMINTANG

The march started from Canton, and up till the time the armies reached Wuhan, the Communists and the Kuomintang were together. It was on April 12, 1927 that the Kuomintang carried out its coup d'etat. The Great Revolution had failed, and the Kuomintang flirted with the feudal forces to overthrow the movement. In the fighting that ensued, General Chu Teh escaped with a bare 1,000 men to Hunan, where he was joined by Mao Tse-tung.

The Communists were never satisfied that the Kuomintang leaders were imbued with real zeal for carrying out their objectives. They suspected that there was too much self-interest amongst the leaders of the Kuomintang to allow for any consideration for the peasants, whose interests were to be disregarded where they came into conflict with those of the leaders. This was intolerable to Mao Tse-tung, whose main driving force and motivation was an intense hatred of imperialism. The Japanese threat had to be met, and their armies ousted. He believed that this could only be done by a peasants' army. Another reason for having such an army was a practical one—that there was almost a complete lack of arms and equipment which would be required by a regular army if raised. In addition, there was a dearth of trained personnel and training facilities, and the most that could be expected in the initial stages was to organise roving bands armed with primitive weapons. These became the guerillas.

POLITICAL REASONING

Mao Tse-tung had to contend not only with the Japanese threat, but he also had on his hands a civil war. To carry out his formidable task required great strength of character and determination. His personal assets apart, where did he derive his inspiration from? As he himself had said, "Our starting point was to serve the people and not ourselves. There can never be any compromise on this issue. Once the people realised this, they

immediately constituted an army, but an army imbued with the highest kind of morale there is, the morale of the oppressed. We were not afraid of being defeated, because a whole people cannot be defeated. It is as simple as that. Where you have the support of the people who are prepared to feed, man, support, and provide intelligence to the army, that army cannot but succeed. On its part, the army must ensure through obedience, honesty of behaviour and conduct, and respect of the rights of the people, that they remain worthy of such support. The main aim is to oust the Japanese or any other form of imperialism, and to establish a democratic form of government, than which there can be no better form of inducement."

He had realised at the very beginning that, in the final analysis, warfare conducted by a regular army was the only answer. The guerilla form was a very important part of the whole, but would always remain subsidiary to the army. He reasoned as follows. "If a country is big and strong, it can evict any invader by force of arms. Again if a country is big but not strong, and the invading armies occupy only a small area, they can still be evicted. In either case guerillas play a subsidiary role. But China is big and weak, and has been attacked by a small but strong enemy, who has occupied huge areas. The war therefore becomes protracted, and guerillas have to be employed on a strategic scale. The war must be a mobile war, offensive or defensive according to our overall strategy. The Japanese dreams have been based on historical comparisons of the conquest of India and North America. Their hopes of colonisation are however doomed, because guerillas will have to be contended with not for a period, but for all time till the enemy is defeated. The whole Chinese nation is at war as guerillas, who rely on themselves for victory. China derives her strength from the fact that she can and will fight for years unaided."

GUERRILLA ORGANISATIONS

The sentiments expressed by Mao Tse-tung give the political background of his reasons for resorting to guerilla warfare, and the place he assigned to it in the scheme of things. It should be remembered that he always believed in a regular army as the ultimate instrument required by the country. Even his guerillas were to be trained and organised with a view to being upgraded into the regular category.

Having identified himself with the people, Mao Tse-tung got them to volunteer as guerillas who were organised into four categories. These were the People's Defence Corps armed with spears and swords, the Ming Ping who were better equipped with guns and grenades, the Guerillas who had rifles, grenades and some automatics, and the nucleus of a Regular Army. The main source of weapons and equipment was captured material.

It is interesting to note that fellow-countrymen captured in the civil war were given the option of returning to their homes or taking up with the guerillas. This leniency brought into their fold many trained soldiers and equipment. During the Long March, the force did not comprise small bands but constituted a large guerilla army. They were fed, supported, and given all vital military intelligence by the people. In order to weld them into an effective whole, Mao Tse-tung decreed an inviolate principle for all guerillas which became their motto, to the effect that they were asked to "preserve your strength and annihilate the enemy". This concept was born of necessity. The guerillas were not trained or equipped to fight regular forces. To incur unnecessary casualties was to be merely foolhardy. Time was of no

real consequence, because they were wedded to fighting over the years till it became almost a way of life. With the gaining of experience, the methods of conduct of war were translated into tactical doctrine. In the interests of brevity and conciseness, this doctrine is reduced to the form of a hypothetical directive.

TACTICAL DOCTRINE

Motto: "Preserve your strength and annihilate the enemy."

This directive explains the principles of war, and operational tactics which are the outcome of such principles.

Surprise: To surprise the enemy is to win half the battle. No operation will be undertaken unless this is first achieved. The utmost secrecy will be maintained at all times in the planning and execution of operations.

Offensive Action: Victory is impossible without such action. All guerilla action will be offensive.

Flexibility: No plans will be so rigid that they cannot be changed to meet the unexpected. Flexibility infers the capacity to fight individual actions over wide areas, and at the same time the ability to concentrate rapidly for a worthwhile target.

Mobility: Units must be able to move at all times at will and with speed. Dispersion demands this ability. Units will therefore function as self-contained entities and not rely on lines of communication.

Speed of Action: The prolongation of any action means that surprise has been lost. Success is therefore unlikely to be achieved, and unnecessary casualties incurred. Pitched battles will never be undertaken.

Relative Strength: On no occasion will an enemy of greater or equal strength be engaged in operations, as this may lead to failure. An encircled unit will resort to any device to extricate itself.

Co-operation: When co-operating with the regular army, their orders will be carried out, since the overall direction of effort must remain that of the army. The feasibility of carrying out the task, however, will be judged by the guerillas themselves, whose assessment in the matter will be final. Any unit which finds itself in difficulties will not call upon other units in the vicinity for assistance if this is at all likely to embroil the latter in the same predicament. The option of rendering such assistance will be that of the assisting units.

Concealment: This is of the utmost importance. All movement will therefore be by night unless unavoidable.

Mandatory Concepts: There are three mandatory concepts which will never be violated and these are,

- (a) Pitched battles will never be fought.
- (b) Attitudes such as "neither moving nor fighting" or "moving but not fighting" will never be tolerated.
- (c) The leader or commander will invariably make his own plan of action, whether this is one of choice or ordered by higher authority. Within overall directions, the selection of his target

and timing of his operation will be determined by him and never for him.

So much for tactical doctrine, which has been given out in a truncated form. Let us now consider some interesting aspects of minor tactics connected with the two main operations of war, that is, attack and defence.

MINOR TACTICS

In order fully to understand the implications of guerilla tactics, it must be realised that guerillas function as self-contained entities. They are equipped and supplied for the duration of the operation they undertake, and are not dependent on lines of communication. This is why they are so insistent that quick decisions are arrived at in all actions. The picture that must remain in the mind is one of lone actions, being fought seemingly unconnected with each other—though this is not the case—all over a given area where enemy troops are in occupation. There is no front as such. The employment of heavy weapons or aircraft in support of actions is the exception rather than the rule.

THE ATTACK

No attack is ever made for the sole purpose of gaining ground. Villages, if captured, are vacated if counter-attacked in strength because they can be retaken again when opportunity offers. All attacks are made with the aim of annihilating the enemy. They are made through choice and not as a result of compulsion by the enemy. By this is meant that in no circumstances will a unit be lured or deceived into taking action by the enemy. All attacks are surprise attacks, and superior numbers are always employed. Attacking units do not concentrate immediately prior to the operation, since this can jeopardise surprise. As a consequence, all movement is made by night. The method of attack is encirclement, but should an attack miscarry, units break off action and "fade out" to a predetermined rendezvous.

DEFENCE

Defence is only undertaken when tactical necessity demands that this operation be carried out—for instance, when resisting on narrow passes, fighting in confined areas in order to inflict attrition on the enemy, and fighting rear-guard actions. Each unit fights on its own in dispersed areas, but the main portion is always kept in reserve for unforeseen contingencies. Specific time-limits are laid down up to which resistance will be made, after which units "fade out". Even when on the defensive, units are enjoined to attack their way out of encirclement, thus diverting the enemy's attention to all points of the compass.

CONCLUSION

It is hoped that enough has been said to show that Chinese methods have been well-reasoned. They have paid considerable attention to the realities of life rather than to academic approaches to the methods of conducting war. That they have been successful in their own country cannot be denied, but this is the very point which is at issue. Would such methods succeed outside their country?

There is a vast difference between fighting guerilla actions in your own country which has been invaded, and fighting similar actions in another's

country. The biggest factor in the success of guerilla action is the availability of information and intelligence at every stage of the operations, as also the whole-hearted support of the population. What is possible at home, is not always possible abroad. It is not the tactics themselves that constitute the "secret weapon", as it were. To the regular soldier they are only variations of accepted practice, but the commander is given considerable latitude in the execution of his tasks. It also calls for a ruthlessness of behaviour, and a callous disregard for life not normally acceptable to the soldier. The physical toughness and hardihood of the guerilla can be matched, but his motivation and utter dedication to his task require a mental approach not easy to emulate. Whatever be the circumstances, however, where the people's support and military intelligence are not forthcoming, guerilla tactics by themselves can achieve little. If this reasoning is accepted, has the time not come when a study may well be made as to how these two missing elements can be made good by regular armies in future campaigns?

CORRECT PRIORITIES

Lieut. Colonel E. A. VAS

THE technical arms and most non-infantrymen are as a rule better acquainted with the implications of incorrect priorities. This is not surprising. An engineer who has only enough material for one project soon learns that he must decide priorities if faced with two projects. This decision thus becomes necessary not only as a matter of intelligence but also from sheer material necessity. The episode of the engineer officer who was asked to construct a track, typifies this material aspect of priorities.

An engineer officer had estimated that a proposed track would cost Rs. 50,000/- and would take six days to complete. He told his commander so. The commander had limited funds at his disposal, and growling fiercely, said, "I can only spare you Rs. 25,000/-; now get on with the task." He received a smart salute and the unassailable reply, "Very good sir. We will have half the track ready in three days time."

It is the same with the gunners, armoured corps and most of the other arms and services. The material with which they deal facilitate their development of an accurate sense of priorities. It has to be so. A gunner cannot fire his first-line scale of ammunition everywhere all the time; a tank cannot move from bound to bound endlessly; five bags of atta cannot suffice where fifty are needed. But the infantry is a different kettle of fish.

An infantryman is a complex, courageous, cheerful human being, whose value, unlike shells, atta or dozers, cannot easily be precisely assessed, weighed or measured. Mathematical calculations cannot decide the priorities for his tasks. This is why a successful commander of men requires twice the ability of those who deal with the material facts and figures of war.

Our men are so good that they will do the impossible for you again and again, and this has begun to breed a dangerous sense of indifference and complacency to priorities in the mind of the average officer towards infantry matters. This complacent lack of sense of priority will be amply illustrated in the three examples which follow.

REGIMENTAL OR STAFF

Most of us agree that the Staff Officer has a cushy time compared to the regimental soldier. Those who have undergone both staff and regimental experience, will confirm that there is far more day-to-day responsibility as an Adjutant, Quartermaster, Company Commander or Commanding Officer in a battalion, than most staff jobs of the equivalent rank.

Now knowing all this, we nevertheless insist on giving Rs. 75/- per month to every psc and yet do not give a commanding officer, company commander, adjutant or quartermaster, command and staff pay. If this is not admitted by the reader as an example of confused priorities, I recommend that he stop reading any further.

I cannot accept the plea of lack of funds. If this was true, we could stop giving the pscs Rs. 75/- and give this to the regimental officers instead. Nor can it be pleaded that candidates will not appear for Staff College Examina-

tions if not given this incentive. If the Military Secretary can detail officers to attend the Senior Officers' Course, and expect them to work hard whilst there, so can this be done for the Staff College. No incentives exist for a Commanding Officer, Adjutant or Quartermaster, yet these appointments are handled ably from a sense of pride. Some will drift to the Staff and others to command by natural inclination, in spite of incentives. We must nevertheless decide which status requires our priority and plan our monetary awards accordingly.¹ But we cannot pay Peter and praise Paul!

Though this is bad enough, insult is added to injury by serious minded officers who sit down and write long papers on the reasons why regimental soldiering is losing its popularity.

Surely this requires no analysis. Any officer who is offered a fairly straight-forward examination as an alternative to his Part D Examination; the prospect of a simple one-year course at a delightful hill-station; Rs. 75/- per month extra pay; a soft chair; no direct responsibilities; and yet refuses the offer and will stick to his regiment with its direct responsibilities; audits and objections; inspections by junior specialists who find fault and ask for explanations; losses and courts of inquiry; show-cause-why notices; is either mad or completely in love with his troops.

Whatever it be, let his attitude not absolve us from deciding correct priorities in this case.

WEAPON AND CEREMONY

An infantryman's proudest possession was his personal arm. I deliberately use the past tense. The critical reader will no doubt raise his eyebrows and accuse me of loss of morale or bad taste. On the contrary, it is you, dear reader, who stands accused of gross indifference. The crime, however, is not one of deliberate neglect, but connivance of malpractices arising through a lack of knowledge of your priorities. Let me explain this charge.

Today a rifle company no longer consists only of rifles and bayonets. There are light machine guns, machine carbines, mortars, rocket launchers and pistols. Those who are armed with these weapons, desire to feel proud of what they possess. But we never give them a chance to express this desire due to faulty priorities and bad ceremonial procedures.

Consider what happens on a ceremonial parade at any level; company, battalion, brigade, or Republic Day. This is meant to be the one big day, where every soldier turns out in his best uniform to present his arms to the senior inspecting officer. The gunners trundle past with their mules or guns or what have you. The tanks also impress their might upon the spectators. Even Mobile Bath and Laundry Units rumble past the saluting base in a three tonner. Each Arm and Service displays his "weapon" with pride. Alas for the poor infantryman. The Bren gunner No. 1, Mortar No. 1, Rocket Launcher No. 1, and Sten gunners, incidentally all key men in the infantry platoon, are made to ground their personal arms and pick up any rifle left over in the kote, and go on parade with this. Yet we expect them to feel proud

¹ It is clear that key appointments above the rank of Lt. Col. will go to the officers who are both good regimental officers and staff trained. But we must not confuse our factors when deciding correct priorities for monetary awards below the rank of Lt. Col. and priorities for selecting higher commanders.

of their personal weapons. The psychological effects on the infantrymen cannot be wholesome.

The original aim of drill was to carry out movements in battle to enable a decisive use of one's weapons in tactical battle. This aim no longer applies. The present aim of drill would seem to be to emphasise personal smartness and group discipline to inculcate a sense of pride in one's turnout, movement and the display of one's personal weapon ceremoniously.

This aim cannot be achieved if our present ceremonial drills are restricted to drills with the rifle only. There is no reason why ceremonial drills, in which troops take part with their personal weapons, may not be involved to obviate the disadvantages arising from our present procedures. If the true aim of drill is to receive our priority consideration, every man must be made to "present" or display his own weapon with pride at a saluting base or before a reviewing officer. It is significant that infantrymen in certain well-established armies, march past with sten guns and light machine guns. It may also be noted that some discontinued the arms drill movement of "present arms," when their short semi-automatic rifle was introduced. In these countries, it is apparent that the drill is adapted to suit the weapon and not the weapon to suit the drill.

There should be no loss of precision or uniformity if such procedures are adopted; on the contrary, a more realistic uniformity can be developed by laying down procedures to ensure that precision is maintained. You cannot build up true pride, using drill procedures which involve the use of someone else's weapon. Our priority should be: One weapon for one man for all parades.

REGIMENTAL SPORTS

The value of sports to the soldier is that it encourages physical fitness, comradeship, healthy aggressive competitive spirit, team work and moral stamina. This is best achieved for maximum numbers by encouraging inter-platoon and inter-company matches. Regimental funds, sports equipment, playing fields and time should be devoted to this end, if the true aim of army sports is to be achieved.

Present trends increasingly emphasise the formation sports meet. This results in wrong priorities being emphasised. This trend, if persisted in, will lead to professionalism and attempts by units to produce winners. Units will thus concentrate on the training of their best each year, to the detriment of the average or poor performer. The true aim of regimental sports will thus be defeated.

Some measures which will re-emphasise the correct priorities, and offset this trend towards professionalism, are recommended as follows :—

- (a) Impose a total ban on inter-battalion sports at the brigade level.
- (b) Hold inter-battalion sports at the divisional level once every year for units who wish to compete. This must be made entirely voluntary.
- (c) Impose a total ban on inter-divisional meets at the corps level.

- (d) Hold command sports, followed by Services sports meets, to precede National sports meets. Divisions can select competitors for these by asking for them.

These measures will not only save money and effort, but also re-affirm correct priorities, thereby enabling units to concentrate on unit needs and raise overall standards of maximum numbers. It will also enable the few that are good to come up at spaced intervals, to coincide with National and Olympic meets. These are seldom held annually.

CONCLUSION

We are always faced with alternatives in life. Correct priorities will provide good results. This principle is soon driven home to those who handle materials, out of sheer necessity, as these factors are subject to accurate assessment and precise calculations. Errors are easy to detect if made. The infantry soldier is a living entity and the priorities with regard to the alternatives facing us in the conduct of infantry affairs, therefore, becomes more confused, less easily defined and the errors arising from incorrect priorities are less easy to detect.

Three examples amply illustrate how aims can go wrong due to incorrect priorities. We cannot claim that regimental soldiering is the bedrock of military life, yet give priority to the staff officer. It is this attitude, more than any other, which has led to the seeming unpopularity of regimental life.

Those who deplore the falling-off in standards of drill, weapon training and maintenance, should surely see the connection between these deficiencies and our own faulty ceremonial procedures, which emphasise wrong priorities. Similarly, if we accept that the true aim of sports to the soldier is that it encourages physical and moral fitness, team-work and a healthy aggressive competitive spirit, then we must also see that the present trends are leading us to professionalism, and defeating our aims. Our first priority is that the maximum numbers should play. This is achieved by giving priority to the inter-platoon and company meets. All regimental funds, time and playing fields should be devoted to this end.

Those who ask, "What's wrong with the Infantry?", would do well to ask, "Have I got my priorities right?"

A STUDY OF COMMAND TECHNIQUES

BY S S

THE technique of command is always of interest to officers of the armed forces. This is as important as the ability of a Commander to foresee operations and plan their successful outcome.

The implications of command can be interpreted as under:—

- (a) **Transmission of the plan to component elements of the force.**

This is done by the issue of orders, either verbal or written.

- (b) **A check or supervision of the execution of orders.**

This is the task of the staff at higher levels, but the ultimate and final responsibility is that of the Commander.

- (c) **Flexibility**

Variations to the plan will have to be made by the Commander once operations have commenced so as to take advantage of a favourable development, or to cater for an unforeseen setback. Whilst doing so of course the initial aim of the battle will be kept in view.

The aim of this article is to study the various ways in which command may be exercised with particular reference to the requirements of the Army.

Operations in the Western Desert during World War II produce an interesting study of command techniques.

For the purpose of this article we can take the actions of the three Generals—Auchinleck, Rommel and Montgomery, whilst conducting operations in the Western Desert.

GENERAL AUCHINLECK

General Auchinleck seems to have relied largely on the issue of written orders to his subordinates. During times of stress he would appear at the battle HQ of Western Desert Force or Eighth Army as it was known later. He rarely went below this, possibly due to a reluctance to interfere unconsciously in a lower Commander's battle.

This procedure seems to have led to misunderstandings as becomes apparent in the initial stages of Operation Crusader, when General Cunningham nearly stopped offensive operations due to heavy tank losses. The aim and method whereby success was to be achieved does not seem to have been clearly understood by subordinate Commanders and hence led to a considerable dispersion of the tank effort.

Again, during the Gazala battles later, the disruption and defeat of the tank reserves, that is, 1 and 7 Armoured Divisions, by their being too far forward, was due to the incorrect application of Auchinleck's orders by Ritchie. Documentary proofs exist that the intention was to keep them concentrated and far enough back, so that they could carry out an effective counter stroke once the direction and strength of the main thrust had been gauged. No checks were carried out by Auchinleck or his staff to ensure that the key to the whole

defence plan was being properly implemented. This may be due to what has been said earlier, that is, a reluctance to interfere in the battle or plans of subordinate Commanders; and due to this hesitation the battle seems to have been lost for the British.

Again, all first-hand battle reports of units and lower formations indicate confused direction at higher levels. No one seems to have been clear as to why certain actions were ordered. This may be the result of a vague and out-of-date battle picture being recorded at higher HQ. It does not appear that much effort was made by higher headquarters to keep in the picture.

It seems therefore that the three implications of command were not fulfilled, in that —

- (a) orders given, were not understood;
- (b) they were not complied with to the extent desired; and
- (c) not being in the picture, there was little flexibility to cope with rapidly changed situations.

GENERAL ROMMEL

Rommel's method of command was certainly more dynamic. In planning, he made certain that subordinate Commanders were clear about their tasks, by consulting them where necessary and briefing them early. This he did by visits to the headquarters concerned.

He ensured that the execution of the crucial element of his plan was in accordance with his wishes by personal supervision and direction. To a certain extent, this may have led to unwarranted interference in the doings of his subordinates. It did however prevent misunderstanding and doubt, and they were quite clear as to what was required. As time went on, it was possible for them to act independently as they had by then been permeated by his ideas on concentration, offensive action and mobility.

Lastly, being forward, he was able to take advantage of the situation as it developed as he was continually in the battle picture. His sometimes rather foolhardy sorties on personal reconnaissance enabled him to make the best use of any operational development.

This aspect, however, had its disadvantages, as it was not possible for him to be everywhere. During Crusader his Chief of Staff had to take over the reins and countermand his instructions regarding the employment of the Africa Corps. The reason was that Rommel could not be contacted and he had involved himself too deeply in a local battle, without taking into account the threat at Sidi Rezegh.

Another aspect was that he was burning up energy at a much faster rate than it was being replaced and for this reason he probably began, in later days, to suffer from ill-health.

GENERAL MONTGOMERY

Now let us study the Master—General Montgomery.

The first thing was that he was quite clear in his own mind as to what he wanted to do. He ensured thereafter that orders were transmitted in a man-

ner that left no room for doubt. For major battles he briefed even unit Commanders personally. Hence the aim, and method of achieving the aim, was known to battle leaders without the misinterpretation that sometimes occurs in their transmission through a long chain.

Next, he ensured that execution was satisfactory by personal visits, or by the use of Liaison Officers (LOs). The latter in due course achieved great importance. They would visit important battle sectors in accordance with the General's directions, and report back what they had observed personally to him. This prevented —

- (a) any major delays taking place in the reporting of the operational situation, which usually takes place at higher HQ if reliance is placed entirely on the normal channels of forwarding situation reports;
- (b) an untrue picture being presented. Commanders with their careers at stake would not put up facts which showed them in a wrong light. Therefore the unbiased reporting of the LOs was of great value.

This system further had the following advantages:—

- (a) It kept the General in the battle picture without unnecessarily involving him in a local situation;
- (b) It probably kept him fit physically to take the stress of conducting major operations for a continuous period of three years. He emerged at the end of the war in the same physical condition in which he started it.

This, of course, does not imply that he was glued to his Headquarters. He went up to see things for himself whenever the situation warranted it, or to drive and spur his subordinates when this was needed.

There were, however, some disadvantages. These were as follows:—

- (a) At times his presence forward might have led to the early completion of operations to a greater extent than actually occurred. Looking beyond the Western Desert, the employment of the massed armour in the unsuitable bocage country of Normandy, and the slow advance by the ground element to link up with the para-drops in Holland appear to justify this comment.
- (b) His LOs began to be looked on as spies. A suitable selection therefore becomes vital, in that they must have the confidence of not only the Commander but also his immediate subordinates.

A compromise between his methods and the great degree of personal command exercised by Rommel therefore appears necessary.

What of the future? On the dispersed nuclear battlefield, improved transportation and communication systems are vital to enable Commanders to brief their subordinates, check execution and direct operations. This would be in the form of helicopters, through television and by enhanced wireless facilities.

OUR PROBLEMS

In our own conditions, the mountainous terrain of our Northern frontiers themselves inculcate physical, and following this, mental inertia. Clear orders before deployment of troops, and personal liaison or visits by Commanders

are, therefore, vital. Among other things, this requires great physical fitness at levels of division and below for all leaders. The use of LOs on Montgomery lines is essential even at brigade level. On an independent and direct wireless network they can keep the Commander continually informed about the battle picture without his having to overexpand his time and physical reserves by unnecessary trips to unimportant sectors.

In conclusion, the moral for all aspiring Commanders is to think clearly; to ensure that what is planned is understood by all subordinates; and to see that this plan is implemented with a certain degree of flexibility to cope with rapidly changing tactical situations.

HELICOPTERS AROUND THE HIMALAYAS

By Major S. D. PARAB

SINCE the advent of independence, the problems of defence of India's frontiers have not only increased in scope but have also become serious and complex in nature. We have a long coastline. The land frontiers on the west pass through the desert of Rajasthan, the fertile plains of the Punjab and the high mountains of Jammu and Kashmir. In the north, the frontier is across the Karakoram Range, and the Great Himalayan Range. In the east, the frontier passes over mountains covered by tropical jungle. Our potential adversaries are being equipped with modern weapons of impressive fire-power. We on our part have deployed some of our defence forces along our frontiers for peace-time security. It is obvious that in case of a war larger forces will be deployed where necessary.

MOBILITY VITAL

The frontiers being extensive, our forces will be required to disperse along the frontage and also the depth of the future battlefields. This will require a large number of troops, which we cannot afford. We must therefore hold the line with small bodies of troops and hold back the striking forces at suitable places in the rear. The striking forces must be provided with an ability to concentrate quickly, strike decisively and then move back in reserve or disperse again. We must therefore provide these forces with operational and administrative (battle-field) mobility.

In a future war, for operational mobility, roads, railways and waterways will be too slow and vulnerable to modern weapons. The great need for dispersal will extend the area of fighting. The advent of nuclear weapons will immensely aggravate the problems of dispersal and battlefield mobility.

HELICOPTERS' UTILITY

Helicopters of various sizes are being tried out to find out their capability in providing battlefield mobility in Jammu and Kashmir, in the Himalayan areas and in Assam. A great variety of tasks, such as movement of combat troops, conveyance of heavy weapons such as artillery and rockets, supply, casualty evacuation, salvage, reconnaissance and liaison can be effectively carried out by helicopters along our sea and land frontiers. In time to come, in place of helicopters, more sophisticated aircraft, which have vertical landing and take-off ability, can be used for the same purpose.

The requirements of the war in Korea first gave us an idea of the real operational value of helicopters. The British operations in Malaya have given us an idea of the use of helicopters for operations in a specialised type of country. These two theatres have proved that helicopters are well suited for troop-lifting, supply and evacuation missions in mountains, jungles, deserts or other areas where the terrain limits or restricts ground transportation. The ability of helicopters to operate from improvised strips, small clearings, ships, snow or ice, permits maximum exploitation of their inherent aircraft characteristics.

In this paper an attempt has been made to put across some idea regarding the employment of helicopters for military and other purposes in India.

COMPLICATED MACHINE

The helicopter is a rotating-wing aircraft capable of sustained hovering and true vertical flight. Technically the helicopter is a complicated machine. Helicopter performance suffers some deterioration in hot climates like conventional aircraft. Under equatorial conditions as in Malaya, it has been found that the lift is half or less of what it would be in temperate climate operations. In winter operations, i.e., in freezing fog and freezing rain, icing on the rotor blades creates problems for flying. Owing to rarified atmosphere, performance at high altitudes suffers severely.

The manufacture of helicopters is complicated, and they are very expensive in capital costs. They are about two and a half times more expensive in fuel compared with conventional aircraft. Owing to technical complications, they cost three times as much to maintain as compared with fixed-wing aircraft. They are not as robust as fixed-wing aircraft.

FREEDOM OF MANOEUVRE

The hovering and vertical take-off capabilities of helicopters provide flexibility in flying which enables almost complete freedom of manoeuvre. Under certain conditions, they can fly in weather which is not fit for flight in the case of fixed-wing aircraft. Very small landing areas are required, enabling the pilot to land just where he likes. They are easier to tuck away on the ground and to camouflage. While operating, they can keep still in the air, thus enabling someone, other than the pilot to do the observation and conduct artillery shoots.

Use of helicopters is economical in certain circumstances—for example, over difficult terrain. Proper use of helicopters in operations has proved them to be ideal vehicles for military surprise.

FOUR CATEGORIES

For operational and logistical purposes, helicopters of four categories are required:

Ultra light—Up to one ton all-up weight: For reconnaissance and air OP duties.

Light—1 to 3 ton all-up weight: For liaison and conveyance of small bodies of troops or essential emergency stores and casualty evacuation from forward posts/rescue work.

Medium—3 to 5 ton all-up weight: For transport of men, stores and equipment i.e. utility/tactical transport helicopter.

Heavy—over 5 ton all-up weight: For transport of larger bodies of troops, heavier stores and equipment.

For operational use in the battle zone, especially on our borders, we will mainly need ultra light and light helicopters. In actual operations, helicopters

will be vulnerable on the ground, and modern fighter aircraft will have no difficulty in shooting them down while flying. While helicopters are being loaded or unloaded in forward areas, it may be necessary to provide them with suppressive fire cover against ground weapons either from other helicopters or from artillery or fighters. To be able to use helicopters in an assault role, troops have to be specially trained to get into action as they get out of the helicopters.

GROUND FORCE USES

The battlefield of tomorrow is likely to present more obstacles to movement than anything previously experienced. We therefore need air vehicles, i.e., helicopters or VTOL aircraft, to give the ground forces battlefield mobility for movement of combat troops, for reconnaissance, for command and control, for liaison, for weapons providing additional fire-power, for casualty evacuation and for other logistical purposes.

In the combat zone, we can combine the two most mobile elements in war; foot soldier and aircraft. In the past this application was limited because the aeroplane could not "live" with the foot soldier on the battlefield and be immediately available for use in ground manoeuvre. But now we have the helicopters and STOL aircraft which can "live" with the soldier.

OPERATIONAL USES

In the combat zone helicopters can be used with advantage for the movement of soldiers and their weapons from the rear to the front line and to switch them from one point to another; liaison movement between dispersed ground units and to place equipment and weapons in positions unattainable by ground transport. In this role helicopters can be most useful in operations on the high picquets. The helicopter can go to places no airplane can.

For patrolling, helicopters can lift troops and their equipment and position them in places from where the patrols become operative. Such a lift will convert unproductive marching time into active patrolling time. Such patrols, especially long-range patrols, can also be kept supplied by helicopters. In case of a casualty in a patrol, instead of abandoning the patrol or sending back the casualty under escort, it can be evacuated by helicopter. Think of the immense advantages that can be derived from the use of helicopters for lifting forward our patrols into the Naga Hills and across the snow-covered passes on to our Himalayan border with Tibet.

IDEAL FOR MISSIONS

Helicopters are ideal for such missions as reconnaissance, visual observation, surveillance, and target acquisition. In helicopters, commanders carrying out reconnaissance can traverse rivers, mountains, swamps, forests, mine-fields and areas contaminated by chemicals or radiation: in minutes instead of taking hours and days. As Air OPs, helicopters will be very effective for the acquisition of targets, for directing the fire of ground weapons, i.e., artillery and mortars.

Helicopters can be used as mobile command posts and to provide essential communications to commanders to fly speedily to critical areas during combat and exercise rapid and responsive command and control, i.e., to provide 'on-the-spot leadership.'

AIRBORNE ASSAULT

In an airborne assault, formed small bodies of paratroopers/air-transported troops can be carried and put down on the ground. Such an assault by helicopters can avoid a part of that dangerous reorganisation period necessary after a parachute descent. Helicopters approaching low and following the contours of the ground, may perhaps be able to approach with a greater degree of surprise. They may be used in the distribution and evacuation of personnel and cargo from, into and within the air head. At the start of the operation, helicopters can load an airborne assaulting force dispersed over a wide area and thus eliminate the concentration for enfilading in the neighbourhood of avoidably congested airfields.

In an operational zone helicopters can be effectively used for tasks such as the delivery of urgently needed light stores, wireless sets and radar spares. They can also be used for Signal Despatch Service, laying of telephone lines and laying of smokescreens. Helicopters can move artillery pieces and missiles anywhere on the battle field. On a nuclear battlefield they will be the key to flexibility. Helicopters as weapons-carriers can be effective. Armed with rockets and MMGs they can provide suppressive fire-power for blasting enemy positions. In this role a helicopter is a powerful weapon in the hands of a tactical commander. The effect of surprise delivery of heavy fire-power at the critical place at the proper time will be immense. Imagine the effect of a flight of helicopters armed with rockets and MMGs, supporting our troops in an attack on an enemy platoon or company picket/locality in Himalayan areas. Targets which our fighters, because of their speed and the terrain, cannot engage, may be dealt with by helicopter weapons.

SIKORSKY H-34 TRIALS

In trials carried out with a Sikorsky H-34 helicopter, a 12½ ft. /570 lb. missile fired from a height of 1500 ft. has landed within inches of its target. Helicopters can also be used in an anti-tank role. Trials have been successfully carried out with the SS-II anti-tank guided missile, mounted on helicopter and engaging moving tanks.

In the USA, an armed helicopter mobile task force has been created—it is called 'sky Cavalry'. This is a reconnaissance-type force mounted on armed helicopters. The aim of this force is to provide the army with an air mobile, fast-moving, hard-hitting and flexible means of performing the combat role of cavalry at an accelerated rate on the battlefield of tomorrow. An armed helicopter force will be less vulnerable than faster aircraft which break the radar horizon and thus expose themselves to modern defence weapons. In addition to the use of the armed helicopter force, larger completely air mobile combined arms teams will eventually be created. These units will include artillery, infantry, and so on. These will be battle groups of small, mobile, semi-independent combined arms units to provide highly responsive direct fire support.

IN MOUNTAINOUS TERRAIN

Helicopter operations in mountainous terrain are restricted by high altitudes. At high altitudes, helicopters cannot carry full loads. Wind velocity, density of air and temperature have direct bearing on the allowable load. However, they can be used for movement of troops to high mountain

tops, to establish new posts, to move up reinforcements and for maintenance. They can be used to establish weather stations and setting up of radio stations at great heights to relay signals which need an optical path.

In desert operations helicopters may facilitate contact with and supply of widely dispersed combat, reconnaissance and security groups. In jungle operations, the employment of helicopters greatly increases the freedom of action of ground units by facilitating movement of personnel and their supply and evacuation. The helicopter's ability to operate from small areas makes it especially valuable in jungle operations. Because of dense vegetation and swampland, suitable landing zones are few in number and thus restrict helicopter delivery of personnel supplies and equipment in mass.

RIVER CROSSING

In river crossing operations, helicopters greatly assist in moving supplies, personnel and equipment across rivers before bridges are constructed or at times when the bridges may be cut or may not be available for transporting supplies. Helicopters can also assist in reducing concentration at the river line and in augmenting the capacity of ferries and other crossing means. In withdrawal, helicopters can be very useful for the evacuation of demolition parties and rear guards.

ADMINISTRATIVE USES

Helicopters have proved to be ideal for casualty evacuation from the forward areas. With helicopters marked as ambulances, casualties can be picked up from the fighting line and brought to medical units/hospitals in the rear, thus saving lives which are lost in the present-day slow process of evacuation. I had occasion to guide an IAF helicopter from Srinagar airfield to Titwal to evacuate two serious cases from the medical detachment there to a hospital in the rear. By road the distance was 94 miles. It was winter and the Nastachun Pass was closed owing to heavy snow. Had the casualties not been brought out at the time we did, they would not have survived. Two days later, the same helicopter brought out two other serious cases from the Gurez Valley. Here again, the road distance was over 100 miles and the Rajdhainangan Pass was closed owing to heavy snow.

Earlier in the year, an officer with a head injury, who was lying unconscious for 16 days and could not be evacuated by road was brought out by an IAF helicopter which was on trial in the area. On being brought out the case was operated upon and the officer is now hale and hearty. Knowing and seeing that our casualties can be evacuated so speedily, the morale of the troops went up. As is well known, now certain helicopters have been earmarked for casualty evacuation from the forward areas in border outposts. The ideal casualty evacuation helicopter should be one which will take two stretchers and one medical attendant.

SEVERAL USES

Various other administrative tasks can be better carried out by helicopters. Forward troops in difficult terrain can be replenished with ammunition and supplies when necessary. Essential/emergency spares, medical stores and even technical stores such as wireless sets and optical instruments can be flown forward. Helicopters can be used as cranes for lifting heavy machinery or for bridge laying.

The number of operational and administrative tasks that helicopters can perform in support of our troops now deployed, along the Himalayan border and in Assam can well be imagined. To support the ground forces we need helicopters which can fly low and slow, hug the ground using forest and other terrain features for cover and concealment. Helicopters are expensive, but when operational needs are over-riding they must be used. A three-ton lorry gives about 250 ton miles per day. A 40 men or 5 ton cargo helicopter is expected to do about 4,000 ton miles per day, i.e., the equivalent of some 16 three-ton lorries. Helicopters will not only save lorries but will also cut holding installations on the ground. They will also save men who load/unload lorries and their administrative requirements.

In the long war in Algeria, the French Army found in the helicopter a work horse of ubiquitous value in operations fought under adverse conditions of terrain and temperature. The helicopters have proved to be the most feasible machines for suppressing the rebel activities in strong holds. Korea and Malaya have also shown us the necessity for helicopters as vehicles for use in difficult country.

NAVAL USES OF HELICOPTERS

There are operational as well as administrative uses for the helicopter in the navy. Helicopters have been tried out for anti-submarine warfare. For anti-submarine missions, helicopters with about four hours flying endurance and capable of carrying overloads up to 1,000 lb. in the form of rockets/torpedoes will be needed. Helicopters can also be used for mine-sweeping and towing missions

Helicopters have been very successfully used to carry units/sub-units of marine/commandos ashore for quick operational action. In the Suez landings of 1956, helicopters for the first time were used in this role with conspicuous success. Working a non-stop ferry between ships and shore, 24 Sycamore and whirlwind helicopters from the carriers "Ocean" and "Theseus", lying a few miles off the coast, landed 415 men and 23 tons of stores in 91 minutes. The speed of the turn-round of helicopters exceeded expectations. A few technique was thus introduced in amphibious landings.

The Suez operations thus introduced the first "helicopter carrier". Like aircraft-carriers, the helicopter-carriers have immense potentialities. In a sea-borne assault in support of a ground operation, large bodies of troops, commandos/marines and others, can be transported by sea in troop-ships or in carriers and landed safely on the shore or inland by helicopters. In case of a forced withdrawal as from Dunkirk, troops and valuable equipment can be flown out to ships or across the sea. A large number of U.S. Marines seem to have been trained and have taken part in exercises operating from carriers by helicopters. It is known that the USA has an experimental helicopter carrier, the "Thetisbay".

AIR-SEA POWER

It is most certain that helicopter-carriers will form part of naval task forces all over the world, thus increasing the scope and flexibility of air-sea power.

For air-sea rescue operations, helicopters are invaluable. Within minutes of an air or naval disaster at sea, such as aircraft crashing or being shot down

in the sea, or naval vessels being sunk or being abandoned, helicopters based on carriers or other warships can rush to the scene and pick up the victims.

Helicopters are also very useful for naval administrative tasks such as replenishment at sea from ship to ship or shore to ship, transferring of casualties from ship to hospital ship or to the shore, transportation of essential emergency naval stores and movement of naval commanders. Such use of helicopters is expensive but convenient. During a naval cruise in the south of England on the aircraft-carrier "Albion", I had occasion to watch a demonstration of helicopters being employed for the tasks mentioned above. I am sure the Indian Navy too will acquire and study the use of helicopters in naval warfare.

AIR FORCE USES

The tasks for which helicopters can be used within the Air Force are mainly administrative, such as rescue work, liaison flights and transportation of emergency stores and spare parts. Air Force rescue work covers tasks such as picking up aircrew or survivors of air crashes or aircraft that may have been shot down in our own or enemy area; and aircraft that may have force-landed. Medical aid can be flown to the scene of disaster in the helicopters that are sent out to collect casualties. When larger and more powerful helicopters are available, they can be used as aerial cranes to pick up damaged aircraft and convey them to the air-bases for repairs. For aircraft which can be repaired on the spot, spare parts can be flown out and the aircraft flown back after repairs. In Korea helicopters were used successfully for picking up American pilots shot down in the Communist area beyond the front line.

SPECIAL OPERATIONS

For special operations such as guerrilla and commando operations and for introduction of raiding parties, intelligence agents, saboteurs with demolition stores, subversive material and so on into enemy territory, helicopters are ideal means of transportation. Under cover of darkness and aided by aircraft and battle noises, helicopters can fly into enemy territory and deliver the parties to selected spots. Similarly, own agents, sympathisers, informers and 'stay-back' parties can be collected again when they have completed their tasks in the enemy area.

In Arctic, sub-Arctic and snowbound areas, helicopters are especially well suited for supplying entire forces and isolated outposts. Speed of supplying and evacuating troops in such regions is of paramount importance; failure to reach supplies/reinforcements to such units may prove fatal.

In nuclear warfare, owing to the destructive power of the weapons, the operations on land or at sea or in the air will demand dispersal before an offensive, concentration during an attack to take advantage of a nuclear strike and dispersal again to avoid being presented as a nuclear target. After an exchange of nuclear strikes, both sides will try to control damage and restore the situation. With communications thoroughly disrupted and vast areas being contaminated or radioactive, helicopters seem to be the only major means which can provide the required battlefield mobility.

NON-MILITARY USES

There is a vast field for non-military or commercial uses of helicopters, for both passenger and cargo traffic. Helicopters can be and are being used in some places for domestic and inter-city transport. For city-to-city traffic, where the cities are between 50 and 250 miles apart, helicopters can operate economically on a commercial basis. For distances under 250 miles, it may be quicker and more convenient to go direct by helicopter than to go out to an airfield, change to a fixed wing aircraft and reverse the process at the far end.

There is of course the probable extension of the use of helicopters as city centre to airport services acting as feeders for the fixed-wing aircraft. They can also be used as inter-aerodrome transport and from city centres to railway stations. The ability of the helicopter to pick up a mixed cargo straight from one industrial site and put it down right at its destination can be usefully exploited. During and after natural calamities such as flood, storm and earthquake, helicopters can be of immense value for relief and rescue work, i.e., sending in of medical aid, food and clothes; and evacuation of stranded persons or casualties.

TRAINING AND CONTROL OF UNITS

Training for helicopters, even of fully trained pilots of conventional aircraft, is a lengthy process and is expensive. If a pilot is to be trained to fly helicopters from scratch, without any previous form of flying experience, he would need about 200 hours before being really fit to operate on his own. To be operationally fit, a pilot has to train to fly in mountains, high winds, a wide range of temperatures and in turbulent conditions. At present our helicopter pilots do their training partially overseas and partially in India. We should now have a school for the training of helicopter pilots in India, and the ideal would be to centrally train IAF, IN and civilian pilots for the State Governments and private establishments. Such a school will provide standardized instructional technique and be economical.

As for command and control of helicopter units, the number of helicopters available being always small, they should be under one centralised control. It is of importance that helicopters should be used economically and with due regard to their capabilities and limitations. Training in air traffic procedures, instrument flying, maintenance, attainment of air sense, working out of flight plans and refuelling effort can be achieved by having helicopters and fixed-wing aircraft in one integrated air force transport command. The IAF are already familiar with the problems of helicopter operations. However, the Army will remain the major user of helicopters in India.

Whenever helicopters are allotted for use, as many tasks as possible should be carried out by them under centralised control. To ensure economy, integration of helicopter transport with other forms of land and air transport is essential. As in the case of other air transport, a procedure for the loading and unloading of helicopters must be laid down.

As for maintenance, helicopters require a heavy servicing programme and spares backing. Their major inspections, as distinct from day-to-day servicing, must be carried out by highly skilled technicians who require specialised machinery not normally found in conventional aircraft bases. In desert operations maintenance is increased as a result of the effects of sand and heat.

FUTURE DEVELOPMENTS

There seems to be a great future for the helicopter as military transport vehicles in India. There is also a big commercial future for the helicopter, for both cargo and passenger traffic.

In the U.K. and the U.S.A., along with conventional transport aircraft, helicopter development is progressing. A British firm had under development a helicopter capable of lifting 100 troops or 14 to 16 tons of load. The same firm had a project for a machine to carry 450 troops or a 45-ton tank. The U.K. and the U.S.A. have been developing the convertoplane which is capable of vertical life with rotors; and forward propulsion is either by other means or by using the rotors, initially for vertical lift and then as propellers.

In India we now have in service with the IAF some Russian and American helicopters. There seems to be a proposal to manufacture helicopters in India in the public sector. While planning the manufacture of helicopters in India, it is important that the three services and the Ministry of Civil Aviation have a common agreement on the types and sizes of helicopters to be produced. They should also take into consideration the requirements of our friendly neighbouring countries and of prospective buyers from South-East Asia, Middle East and Africa.

Till such time as all our posts and picquets along the borders in Ladakh, and across the Himalayas are connected up with all-weather roads and tracks, we should have helicopters of various sizes to provide us the required operational and administrative mobility as and when it is required to enable us to defend India.

TANK FIRE BY NIGHT

By Maj. S. K. MATHUR

THE use of tanks at night has been decried in the past. Tanks were considered ineffective between the so-called tank last light and tank first light. I suggest these terms do not apply in our country as there is no appreciable fog at dusk or early morning mist. The complex that tanks are *NOT* to be used at night must be removed. More and more emphasis is being placed on night fighting. It is no longer a specialised operation. The side which is less well equipped has no option but to rely on the cover of darkness to close in with and strike at his stronger adversary. This is the best way to reduce own casualties and inflict heavy casualties on a well-equipped enemy. Examples from the Second World War and the operations in Korea can be cited where decisive results were obtained against better equipped forces by resorting to night fighting.

Tanks must play their vital part in these operations. The psychological advantage gained by large-scale armour movement not easily detected at night and the surprise gained by appearing on the flank or the rear of the enemy may well-disintegrate the enemy's defences and lower his morale considerably. The major problems that have to be surmounted by tankers in night operations are direction-finding, overcoming of obstacles, detection of targets and control direction of fire power. Movement of tank units at night is possible. It entails detailed study of the area over which movement is to take place.

TWO MAJOR ASPECTS

Tank fire night brings into focus the two major aspects-detection of targets and direction of fire on to them. The fire control equipment inside the tank makes it possible to fire the gun with ease in the darkness. The major problem which confronts one is to pinpoint the target, for once this is done, destruction becomes easy. Several methods have been devised to overcome this difficulty, and methods have been found to lay the gun on to the target, but all these methods have certain limitations and call for the introduction of a simpler and quicker method of showing up the target. The various methods in use and the one recommended are discussed below.

USE OF SEARCHLIGHTS

Searchlights have been used in the past to light up the target area. In practice, searchlights from ARVs have been employed. Whereas it has been possible to light up targets on the ranges, in actual operations this method has serious disadvantages. The ARV has to move up very close to the target to get the range. With the searchlight mounted, it invites immediate destruction and a specialist vehicle is lost. This method should therefore be completely ruled out and not even considered in training.

Even if searchlights throwing stronger beams over greater distances were acquired, this source of light has every chance of being destroyed by aimed fire from enemy tank guns not blinded by that particular source.

Use of infra-red equipment is still in the process of development. It is possible to navigate in the dark by this method, but whether ranges up to 1,000 meters and more can be obtained is doubtful. Infra-red equipment in use can be easily detected and subsequently destroyed.

RANGE CARD

Another method successfully tried out is what may be called the range card method. Range cards are prepared for the target area by day. AFVs are positioned at night with the aid of a centre line marked on the ground. Zero lines are established by means of an illuminated, pin-hole, gun-aiming point. Guns are then laid on to pre-selected targets indirectly by applying known line switches, angle of sight and ranges to targets.

Whereas hits are recorded on targets at the field firing ranges, this method too suffers from disadvantages. Engagements are confined to a pre-selected target area, recess have to be carried out by day very close to enemy positions, and may not always be possible. Those targets for which line switches and ranges have been worked out can be assured of punishment, any other targets appearing in the vicinity will have to be engaged by the gunner's own judgment. These disadvantages could be surmounted if the target area were illuminated. Direct laying and direct corrections could then be applied.

TWO-INCH MORTAR FLARES

Two-inch mortar flares, when fired close to enemy positions, illuminate the target area and offer good opportunity for engagement of targets. This method too suffers from two major disadvantages. Due to their restricted range, the infantry using the mortars must get close to the target area. In the process they can be ambushed or shot up. Their movement cannot be controlled once the mortar party sets out.

ARTILLERY STAR SHELLS

Star shells fired from artillery guns can give us the range and also illumination of the target area. To direct the shells, liaison will have to be provided by the artillery. This method could be employed successfully in a set piece attack. The guns would, however, be available only at the cost of fire power elsewhere.

STAR SHELLS FROM TANKS

The best method would be to provide star shells with fuse settings to adjust ranges for illumination, which can be fired directly from tanks. Target areas could then be illuminated at will by the tankers themselves. Direct aimed fire from tank guns would ensure complete destruction of all types of targets.

The development of these shells should not present a difficult problem. Smoke shells fired from Centurion tanks are made up of three smoke canisters which reach up to a range of 3,000 yards. If these canisters were replaced by para flares, an answer could be found. Similar shell could be developed for other types of AFVs as well.

Since illumination will be caused beyond the target area an additional advantage will be gained. Targets having height, like enemy tanks on the skyline, will be silhouetted against a bright background and will stand out clearly. Destruction can follow.

This method would be simplest and quickest for showing of targets and their subsequent destruction.

THE BEST METHOD

Use of tanks by night must be encouraged. Decisive results can be achieved by employment of armour at night. A detailed study of the area of operation will help in direction-finding and overcoming of obstacles. Detection of target can be done by illumination of the target area. Several methods have been tried out successfully, but they all have their limitations. Perhaps the best method to adopt would be to develop a star shell which can be fired from the tanks. This will give tank commanders an independent means of illuminating the target area and destroying the enemy by direct laying, using direct corrections which is the best method tanks can employ to destroy a target.

CASE OF ANTI-AIRCRAFT DEFENCE

By Major R. S. RAWAT

I am certain that it was said in the lighter vein when someone once remarked that of the three most useless things in the world, one was the anti-aircraft gun. The critics of anti-aircraft gunnery have been certainly unfair when they summed it up as a 'hit-and-miss affair'. Many a field Commanders even today while setting up exercises and TEWTs paint a very hazy picture of air situation, just mention a few anti-aircraft guns in the ORBAT probably for mere sake of inclusion and hardly touch upon the deployment aspect of these guns. This simply illustrates the apathy shown by ground forces towards anti-aircraft defence. Yet the history of the Second World War is replete with examples where absolute priority was given to the requirements of anti-aircraft defence over other types of war effort.

Those responsible for any air defence system at times tend to belittle the role played by anti-aircraft element. In this joint venture, anti-aircraft resources should be given due place. The advantages of closer co-operation between air force and anti-aircraft elements cannot be over-emphasized.

The anti-aircraft gun served the war in many ways. It took a heavy toll of enemy aircraft by destroying and damaging them. A good many bomber commands were scared of very heavy casualties from anti-aircraft fire. Thus it acted as an effective deterrent to enemy intruders. Finally, it upheld the morale of civilians even by firing off at imaginary targets. It is no wonder that Field Marshal Montgomery, while opening his first post-war conference, gave anti-aircraft defence first priority in the Army.

It will be the endeavour of this paper to discuss the problems of anti-aircraft defence in relation to air defence and suggest ways and means to overcome those hurdles.

ESSENTIALS

The three basic essentials of any air defence plan should be understood first. These are briefly enumerated below:—

- (a) Air Force requires adequate time to scramble fighters to their fighting height before the arrival of enemy plane. To do this, they should have proper means to receive early warning of attack.
- (b) Anti-aircraft guns, which form the bulk of ground defence, are required to protect vulnerable areas and points.
- (c) A system is required firstly to collect information and intelligence regarding movement of aircraft both friendly and hostile; and secondly pass them as speedily as possible to all the organs of defensive machinery.

These three basic essentials are the pre-requisites of any second air defence plan.

PROBLEMS OF AIR DEFENCE

It would not be unwise at this stage to acquaint ourselves with some of the problems of air defence which face us today. It would help the reader later to appreciate the allied problems of anti-aircraft defence in correct perspective. Briefly these problems are:—

(a) **Early Warning**

The value of early information and air intelligence has already been emphasized. Early warning helps an air defence commander to build up a complete picture of air battle. The problem in its wake brings forth a complete chain of trained observation posts, reporting posts and centres which form the basis of entire 'control and reporting system'. The various sources of early warning have to be co-ordinated. The main problem remains how speedily and accurately the early warning is received and distributed.

(b) **Signal Communication**

This plays a vital role in ensuring the success of any air defence plan. It is through these arteries that the life blood of the entire air defence system flows. In the hands of the air defence commander, it is the only means to exercise operational control over all active and passive measures. In the absence of a sound communication system, utter chaos would prevail in the face of an air attack.

(c) **Aircraft recognition**

It is a difficult task to differentiate between a fast flying friend and a foe. This had been the cause of many unhappy accidents when gunners quick on their firing pedal have shot their own aircraft. No matter how much a gun detachment is trained in aircraft recognition, under the heat of battle they are liable to err. This is a vexed problem of any air defence.

(d) **Co-ordination with the Civil Defence Organisation**

Defence against air attack is all-embracing. The role of a citizen in the air defence of a town is no less important. The gunners and airmen may destroy hostile raiders but unless the normal life of a town ceases to function soon after an air raid, utter panic and chaos will prevail. It is from this important angle that the machinery of the civil defence organization should be checked and oiled regularly. This should be well knit with the active air defence plan. In peace, this presents a rather delicate problem. The solution needs due caution and restraint as over-enthusiasm might spread panic. How all these means of passive air defence would react when the balloon is up has to be well thought over during peace time.

ANTI-AIRCRAFT DEFENCE

The problems of anti-aircraft defence should be studied in relation to those of air defence already discussed. Some of the main problems facing anti-aircraft defence today will be discussed now under the following heads:—

(a) **Manpower**

Unlike other countries, this is no problem in the case of regular units. But bulk of the anti-aircraft units draw their manpower through territorial recruiting. It is here that lack of good response often results in shortage of manpower both in quantity and in quality. This lack of response both in number and attendance adversely affects the training of territorial army units. It must be admitted that anti-aircraft gunnery, apart from its many specialized and varied

duties, requires a high degree of intelligence. This in turn calls for a good basic education in respect of recruits. Therefore, in order to attract the right type of volunteers, better concession should be given to these part-time soldiers of the territorial army both from the Government and employers' side. In a way, by recruiting themselves these volunteers accept a normal peace liability and an abnormal war liability. Therefore, a good compensation should be due for their dual role. This would overcome the recruiting problem and it would be easy to raise units and embody them up to the required strength. While on this subject of manpower due care should be taken to confine recruiting to less hard-core industries—where men can be easily spared during an emergency call. Drawing territorial army volunteers from industries and professions which by themselves are required to function during the war time would be defeating its object. The same men cannot be expected to function at two different places. This should be borne in mind by those responsible for raising such units.

(b) Equipment

Equipment has always posed a serious problem in anti-aircraft gunnery. The demand on anti-aircraft equipment is so varied in kind and fast changing in application that it becomes a problem to keep up-to-date. No other arm has embraced so many changes in types of equipment as this branch. It is a kind of race run against the fast-moving developments in air warfare. The budget of a country would regulate the speed of this race, whereas her overall defence policy would determine the type of equipment to be used. It is here that a firm decision is essential so that those responsible for anti-aircraft defence can formulate their plan concretely. This is by no means a simple task and would demand considerable thought.

(c) Target

Acquisition of a suitable target for anti-aircraft practice firing is another crying problem. The requirements of such a target are, firstly, it should be faster in speed so as to stimulate modern fighters and fighter bombers, and secondly it should be capable of manœuvring on varying courses. None of these requirements are met by the present drogue target towed by a dakota. In this respect, a pilotless target aircraft is the ideal answer. This would also solve the present problem of radar acquisition which suffers normally for want of radar sleeves.

(d) Air Co-operation

Air co-operation provides the main essence of any anti-aircraft training. Without it, the training merely remains theoretical. Air co-operation is useful for silent laying, live practice firing and teaching aircraft recognition. The practising batteries at the camps are very often unable to shoot owing to lack of air co-operation. It is here that a case exists for making our units self-sufficient in the matter of air co-operation. This can be done if the present air observation post (AOP) flights in artillery take on this task. It would mean equipping them with a target towing aircraft. In this connection, it is interesting to note that the Navy provides its own air co-operation for anti-aircraft practice.

(e) Static defence

Siting of guns and fire control instruments in towns would normally raise many an eyebrow in peace time. This is a peculiar problem of static defence. Actual sitting of guns in built-up areas presents a tough task to an anti-aircraft defence commander. The operation more often than not is handicapped by civilians' protests. This requires careful planning and co-ordination with civil authorities. The aim should be to ensure maximum functional freedom for guns on one side and minimum infringement of civilian privileges. It is for this reason that most of the paper planning defences in respect of towns and installations should be actually tried on the ground and the necessary adjustments made during peace time. The question of equipment for units on static role also needs examination. Normally such a unit is equipped with static guns only. It must be borne in mind that flexibility is essential in any anti-aircraft defence, however static its role may be. Therefore a fair portion of guns allotted to such units should be mobile. Against this, the argument stands that changing of heavy anti-aircraft gun positions too often is also not feasible in static defence. These guns and instruments take time to become effective after they have moved into their new sites. Levelling of guns and instruments, laying lines and co-ordination of warning system are some of the tasks which consume considerable time. From this point, static guns are better suited. All these pros and cons should be studied before deciding to equip a unit designed for static defence.

FUTURE

Air warfare has undergone vast changes between the two World Wars. The detonation of atomic bomb showed new possibilities. At one time, the bomber was considered the battle-deciding weapon. Today we hear of supersonic flights; counter to these are ballistic and guided missiles. It is being gradually realized that ground forces would be the only answer to meet such new threats in three dimensions. It is here that our future task lies. The present anti-aircraft gunnery should serve as a nursery to the future development of rockets and missiles. A start, however small, should be made right now. In the face of spectacular changes in modern air warfare, anti-aircraft gunnery has to be kept up-to-date and current, otherwise it would die a natural death. This is the problem of today.

It is one thing to condemn anti-aircraft gunnery and brand it as out of date, and quite another to study its current problems and derive its full use in the present context. Every weapon finds its counter. The invention of supersonic bombers gave the impression that it would completely paralyse the entire system of ground defence. Yet the birth of rockets and ground-to-air missiles has met the challenge. Anti-aircraft gunnery which would logically take over these newly-born weapons would still be required.

Any anti-aircraft defence plan during peace suffers from neglect and it is normally relegated to secondary importance. In peace time, there is a general approval to accord lowest priority to anti-aircraft defences. Yet on the outbreak of hostilities, anti-aircraft defence of a country takes the first brunt of enemy attack. It is an insurance against surprise and upholds morale during crisis.

THOUGHTS ON GUERILLAS

Major PB DEB AOC

“विषे विषक्षयम् — Destroy Poison with Poison”

—Chanakya

THE aim of this article is to consider Guerilla Warfare from the point of view of its desirability in the context of modern warfare wherein an atomic war is a close possibility and also to consider its allied aspects e.g., legality, role, characteristics, scope and limitations and finally organisational considerations.

DEFINITION

A guerilla warfare is that type of warfare, where a force taking advantage of concealment and/or surprise, oppose, attack, or harass a superior force or a force of its own kind committed to a similar pattern of warfare, in a difficult terrain so as to neutralise, disrupt or hamper the mission of the opposing forces.

NECESSITY—FACTORS

This type of warfare is necessitated or occasioned due to one or combination of more than one of the undermentioned factors:—

(a) *Unequal strength*

Where one of the parties with disadvantage in strength takes full advantage of the terrain and local conditions (including support and sympathies of the local population), to oppose the other.

(b) *Sudden collapse of the central authority*

Sudden collapse of the central authority whereby certain formations, sections of the public or a newly set up government not reconciled to surrender, choose to continue its fight under adverse circumstances.

(c) *Special Force*

Desirability to organise a special force on this basis to harass the rears of the enemy or to disrupt its lines of communications, or to perform any special mission e.g. raid on enemy HQ, kidnapping or killing enemy VIPs, infiltrate deep into enemy territory for reconnaissance etc.

(d) *Extremely difficult mountainous or forest terrains*

Certain extremely difficult terrains where deployment of conventional formations may neither be economical nor fully effective due

to difficult approaches and unlimited scope of concealment by the opposing forces.

(e) *Counteracting Banditry or similar anti-social/anti-State organised forces*

Specially well armed banditry who defy the central authorities or occupational forces for gaining their own ends. This could happen—

- (i) When an army advances or retreats.
- (ii) At the rear of the army by disbanded or deserted soldiers of the opposing forces.
- (iii) When certain area becomes dacoit or bandit infested like the districts of Bhind-Morena and Chambal Valley in Madhya Pradesh.
- (iv) When quasi-political forces in difficult terrains e.g. Communist terrorists in Malaya (since ably liquidated by General Templer), choose to rebel and fight against the central authority.
- (v) To counteract the organised guerilla forces of secret organisations e.g., 'Mafia guerilla bands' (or Mafiosi) in Sicily.

LEGALITY

Victors have always dictated the law in respect of war crimes over the vanquished. World War II conclusively proved this. Whereas illustrious soldiers like Kesserling and Yamashita had to face dishonour or execution, it is a fact that not a single person on the allies side (including their shady collaborators e.g. Italian Partisans) had to face the same fate.

But as an academic interest it should not be altogether ignored. Legally such a force could be considered to be well within the accepted convention of international law (and customs of war) in case they adhere to the following conditions:—

- (a) They are properly uniformed and form a separate entity as such from the civilians and the opposing forces.
- (b) Even when they satisfy the above, they do not form the rebels of the same nationality against a recognised and a stable government.*
- (c) They do not resort to plunder or forceful requisitioning of property, recruits or transport and not indulge into reckless acts of reprisals, blackmailing and unwarranted killing of hostages.
- (d) They observe the normal rules and regulations of the armed forces of their own country in general.

As a practical choice, (in case formation of such a force is indicated), it would be better to ignore this aspect of the question as a "victor" is always

* Civil wars excluded. In civil wars, the opposing forces lay down their own rules according to their ideologies and temperaments.

right and no force can fight for long or for a cause, unless it has firm faith in the final victory.

HISTORY

History in short could be summed up—"The force is as old as war itself". In Napoleonic wars, the Spanish Guerillas made it impossible for the Grand Army to be effective beyond the Capital of Madrid and certain other principal cities. No transport was safe without adequate escort. Likewise the retreat of French Forces from Moscow was made a nightmare and an unparalleled slaughter, by the Russian Guerilla Bands.

World War I saw action on these lines by—Arabs under the Great Lawrence. But the honour of effectively using this type of force in World War II, unquestionably goes to Marshal Tito and his partisans in Yugoslavia. As in cases of Spanish Guerillas in Napoleonic wars in World War II, the German occupation forces had no control beyond the principal cities and they were almost frank in admitting the same. It is an epic example of guerillas and partisans tying down almost a German Army Corps.

Likewise the honour to neutralise the terrors of Gestapo in France, Belgium and Holland goes to Maquis and similar other organisations in these countries. When Allies landed in Italy, the Italian Partisans behind the German lines played an important role but unfortunately their standard of ethics and discipline left much to be desired.

The British Army due to its incipient conventionality never took heart and soul to this form of warfare, but some of their commanders really believed in its effectiveness and acted to create such forces. Examples thereof are detailed below:—,

- (a) The Wingate Expeditions in Burma—CHINDITS.
- (b) The British Commandos.
- (c) The long Range Desert Group in North Africa and Popskis Private Army in Libya and Italy (LRDG and PPS).
- (d) SAS—Units whereof are now standard outfits of the British Army.

The exploits of these forces are too well known to be repeated here.

SCOPE

Unlike the main armed force of a country, its scope is limited. As long as it retains its entity as a Guerilla Force (or Partisans) it must support or sustain a cause. It can never force a major decision, which is the sole result of either a political compromise, change in situation affecting a political change (or upheaval), or an unqualified victory by the armed forces. Therefore such a force can:

- (a) supplement and form part of a regular army for a particular type of warfare whenever occasioned under the circumstances mentioned in Para 3(c), (d) and (e).
- (b) it remains essentially a central core of resistance when the government of a country is suddenly overwhelmed by opposing forces (e.g.

Blitzkreing) or political compromise or capitulation of a dishonourable nature.

(Unfortunately a country falls as much by internal corruption as by external aggression which only hastens such a collapse).

PURPOSE AND DESIRABILITY

Since circumstances within the scope specified may befall any country or government especially when an atomic warfare (to be dealt with later vis-a-vis a guerilla force) is not physically or ideologically impossible or impracticable* and political stability in certain newly created democracies in SE Asia, N Africa or countries in Latin America being constantly threatened by anti-Government guerilla forces (e.g. South Viet Nam, Algeria and Cuba), creation and maintenance of such a force or at least apart of the force specially trained as such is not contra indicated.

Therefore in every army it should be organised as much as the final core of resistance against overwhelming force towards 'vive la esprit' as a definite deterrent towards atomic warfare, should it become a final mode of victory over strength and ideology. It should always be borne in our minds that no war can be finalised unless the spirit of the country is crushed. What more could contribute towards this end than a staunch band of compatriots who remain irreconciled and fighting for a cause?

GUERILLAS VIS-A-VIS ATOMIC ATTACK

The ideological differences of two main blocks as in the past so in the present makes one apprehensive of another war where men may not deter to use the 'maximum force'. Even if it is assumed that atomic force will not be used 'as agreed', but when one of the parties is about to collapse, there will be very great provocation on its part to use an atom or a hydrogen bomb. Besides, stress and strain in a war may initiate such an action by either side on a false alarm, an intelligence report, or merely as nervousness on the part of the cabinet and General Staff.

Let us imagine a situation as reported by a neutral country on October 1, 1999:

"Frontier Province of country X has been heavily bombarded. It is feared that clean 'Hydrogen Bombs' were used. All the visible resistances has collapsed. The entire province has been more or less laid in ashes and ruins. There is no evidence of any life or living. The forces of the attacking country are marching towards the Provincial Capital MANDELA in a well organised armoured column".

Report on October 3, 1999:

"It has been reported that taking over of MANDELA has been delayed. The guerillas of country X, well hidden in the forests and mountains surrounding MANDELA (and perhaps operating from the underground shelters), have caused severe disruption in the enemy L of C and advance in general. With the use of Infra Red Telescopes, a party of anti-tank squad, using 'hollow charge principle' (subject to confirmation by the

* Unfortunately the 'History repeats itself'.

military authorities) have rendered 75 per cent of the advancing armoured cars ineffective. The other losses are also significant. It is hoped that the fall of MANDELA will be sufficiently delayed till the countries main armies and its other allies step in".

One factor emerges from the above realistic situation. It dictates the necessity of an organised Guerilla Force for a country.

ACTUAL CONSIDERATIONS AND ROLE

In case the foregoing portion of this article convinces the necessity to create an organised Guerilla Force, the following points require some study as an a-priori requirement:

- (a) The role of such a force.
- (b) The distinctive characteristics from a conventional unit or a formation.
- (c) Basic considerations in the spheres of organisation (also suggestions thereof) transport and equipment.
- (d) Comparative suitability of a particular tribe or class in preference to others of the same country.
- (e) Considerations in respect of training of such a force.

Role of a Guerilla Force

The role of this force is corollary to the definition (para 2) and necessity factors (para 3) brought out previously. The role as under will meet the requirements:

"To maintain the essence and emblem of the fighting spirit of a nation when overpowered by a superior force, weapon or other reasons.

"To fight a similar force in case of an attack on the own territory by an external power.

"To assist the government of the country in combating similar elements e.g. Dacoits, Brigands and Armed Rebels who choose a difficult terrain for their activities and cannot be quickly neutralised by a conventionally trained and organised unit or a formation or the forces of the civil government e.g. Police."

DISTINCTIVE CHARACTERISTICS

Every special force or a force organised for a special task should have distinctive characteristics to make it different. Whereas the undermentioned qualities will no doubt go to make any body of troops to be 'better soldiers', but these are considered to be basic qualifications of a guerilla force.

- (a) An uncompromising aggressive spirit imbibed through tradition, discipline, training and unflinching loyalty to the constitution of a country.
- (b) Ability of a highly developed close combat tactics and use of silent

and handy weapons e.g. Knives, Dhas, Khukris (and even Bows and Arrows!).

- (c) Adaptability to most difficult terrains and ability to stand continued long exposures to adverse weather.
- (d) An intimate knowledge of all the local conditions, topography, factions and sympathies of the local population. It is felt that an innate sympathy of the population where guerillas operate is rather important.
- (e) A very high degree of skill in camouflage, concealment, field craft and shock tactics involving 'surprise' as main asset at all times.
- (f) An excellent training in use of light artillery, mortars, LMG and small arms and a sense of economical use of ammunition and explosives.
- (g) An absolutely minimum 'adm tail' and a skeleton HQ Organisation, capable of fighting its own 'guerilla' action as a matter of course and not as an exception.
- (h) A force with a strong sense of initiative and independent (and bold) actions.

Examples:

- (i) Communist terrorists in Malaya.
- (ii) Dacoits of Bhind-Morena of Madhya Pradesh.

ORGANISATIONAL CONSIDERATIONS

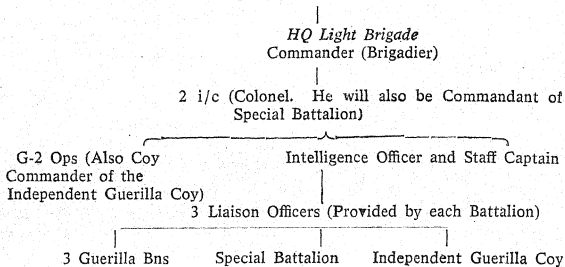
The requirements of this type of warfare dictates a light form of unit organisation with an officer to command at platoon level due to basic requirements of high degree of initiative, bold and independent decisions or actions at frequent intervals. A Battalion with 3 companies and one Adm cum Support Coy should suffice the requirement. Also every platoon 2 i/c should be a JCO, so as to warrant splitting up of a platoon to an independent task if need be.

Likewise the formation to control the Guerilla Battalions e.g. a Light Guerilla Brigade should be very light and devoid of most of the 'adm tails'. It should be extremely mobile, should have an independent Guerilla Company as a permanent feature to retain its effectiveness as a fighting entity in true sense of the word and have under its command a special Battalion to give the entire Adm, Medical, Signal, Light Artillery and Heavy Mortar support/cover. (It would be preferable to have MMG split up with each Battalion at all times. One section per Battalion is advocated).

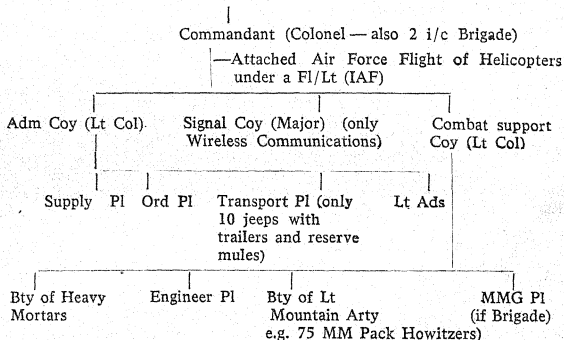
An organisation higher than that of a Brigade is not advocated. It will somewhat reduce the effectiveness and take away the sense of true initiative from its commander—not to say of 'red tape' of the staff and heavy staff requirements. But occasion may arise when two or more of the light Brigades may have to operate in the same region. In such a case liaison organisation under command of a Division Commander (who should himself be an ex 'Guerilla') may be necessary.

A suggested skeleton organisation of the Light Brigade HQ and that of the special Battalion is given below. It is felt that basic necessities will be met as per suggested organisation:

(a) *Light Brigade Organisation*



(b) *Special Battalion*



TRAINING

The following require consideration in this respect:—

- Comparative adaptability for this type of warfare by certain class of people or tribe of a country over others of the same country.
- Suitable terrain well within the country borders—fit for such training.

Fortunately in country like ours, both the above requirements are fully met.

People pertaining to hill tribes and hills tracts, tribes of NEFA and Bhils of Rajasthan and Madhya Pradesh possess excellent material to be trained as formidable guerilla warriors.

Likewise suitable mountainous, deeply wooded, bushy, desert and those with deep ravines or gorges (e.g. Chambal Basin) or combination of one or all of these types of terrains are centrally located in our country.

A high degree of skill need be imparted for:

- (a) First aid.
- (b) Animal management.
- (c) Jungle craft and improvisation of every sort.
- (d) 'Live on land' for a long period.
- (e) Erection of bridges over obstacles with ropes, canes and bamboo.
- (f) Night manoeuvres.
- (g) Camouflage and concealment.

TRANSPORT AND EQUIPMENTS

The consideration of this aspect of warfare from all angles dictates only jeeps and mules as the only permissible forms of transport with cover of a flight of helicopters (mainly for evacuation of casualties and transport for the commander during operations) for each brigade. All other forms of transport however convenient and alluring at times or even suitable, should be discouraged as a matter of principle. It should be remembered that lightness would give speed, speed would afford surprise and whosoever surprises first wins the game.

Regarding weapons and equipment, the following basic necessities should dictate the development:

- (a) Robustness and lightness.
- (b) Full use of infra red ray equipments for good visibility at night.
- (c) Full use of transistor type of wireless reception and transmission sets.
- (d) Easy dismantability and assembly of heavy mortars and light mountain guns to make these into 'man carry' pieces.
- (e) Designing of all loads into 'man carry' ones.

OTHER CONSIDERATIONS

As sometimes or the other as an academic interest it would be questioned whether such a force could ever be used in the conventional Infantry role. The answer to this is that its equipment and transport makes it unsuitable for such a role but if an occasion arises — (for example) — for a squadron of armour or a battery of artillery to substitute the role of an Infantry Company in certain circumstances the same should hold good for a guerilla company as well.

CONCLUSION

It is encouraging to learn that a growing group of military thinkers have started beliving in the effectiveness of this form of warfare. But unfortunately most of them concern either with counter-guerilla tactics by the conventional forces or train such forces for counter-guerilla role. Great saying of CHANAKYA is lost sight of— "विषे विषक्षयम् i.e. Destroy poison with poison". The most effective anti-guerilla measure is to have ones own guerilla forces—organised and trained as such. It is no secret that present Red Chinese Army has it beginning from modest guerilla forces and they still firmly believe not only in such tactics but maintain vivid guerilla characteristics, without in any way losing its effectiveness as an army when opposing a conventional force. Besides, political stability in certain newly created democracies in SE Asia, N Africa or Countries in Latin America are being constantly threatened by anti-government guerilla forces led by over-ambitious or politically dissident leaders.

The above factor when coupled with the convictions of another set of military thinkers who make no bones about the correctness of tactical use of nuclear weapons in the event of a war of any magnitude (use of nuclear weapons were advocated in as recent as Korean War), creation and maintenance of a guerilla force as part of a regular army is clearly indicated.

BOMBAY—CRADLE OF THE INDIAN NAVY

By Commander F. C. HYTTEN, IN

THE saga of Bombay and the story of the Indian Navy are so closely interwoven that it is well nigh impossible to consider one without the other. Till the advent of the European, Bombay was little known, for its remoteness and strategic in consequence rendered it of small interest to the Indian chieftains and princes. The European adventurers, however, were from great maritime nations and trusted their ships to carry them to India, to fight their battles, to capture and hold new territory if luck favoured them, and finally to convey them back to their native shores with spoils.

It was a first objective therefore to find a secure and commodious harbour where their ships could ride in comparative safety and could be careened and repaired if necessary, to face again the hazards of fortune. Their discovery of Bombay immediately attracted them to it. It possessed all the prerequisites they could possibly wish for—protected inlets, a sufficient depth of water, sloping beaches, promontories from which the approach of a likely enemy could be detected early, plenty of timber, fresh water and, most important of all, comparatively weak land powers in the immediate proximity to contend with.

COMING OF THE EUROPEANS

The first Europeans to land in Bombay were the Portuguese, who arrived at Mahim in 1509. They made a second descent in 1517, and in 1529, as a result of a naval engagement in Bombay harbour, Thana, Bandra, and Karanja agreed to pay tribute to them. In 1534 Bombay passed into Portuguese hands, and traces of their occupation can be seen to this day in the forts, churches, and wayside crosses dotted all over Mahim, Bandra, Santacruz, Marve and other northern suburbs of Bombay. The very dress and culture of many of the local inhabitants is perhaps the most enduring monument of this period.

The English, in the meanwhile, were also fully alive to the wealth and trading potential of India. Hitherto, trade had followed the land route, but now it was within the grasp of any maritime power who could muster the ships and the men and was prepared to undertake the venture—and the English were not wanting for long!

The East India Company was formed in 1599. The Indian Navy as it is constituted today traces its origin to 1613 when the Honourable East India Company's Marine was established as a fighting force to protect the Company's convoys and trading interests against their Portuguese and Dutch rivals, and others seeking to interfere with their prerogatives and monopolies. The advantage of Bombay as a base from which to operate had long attracted the Company's attention. In 1626, a combined English and Dutch force invaded the island from the sea and burnt and pillaged the settlement, but actual occupation did not materialise owing to the mutual jealousies of the two friends of expediency! Bombay continued in Portuguese possession—but not for very long.

ENGLISH GET BOMBAY

In 1662, on the occasion of the marriage of the Infanta Catherine of Portugal to Charles II of England, the island of Bombay was ceded to Charles as

a part of his bride's dowry. The British Crown thereby acquired for the first time a territorial possession in India. But the small island did not yield revenue sufficient to defray its expenses, and thus it came about that Charles II in 1668 transferred Bombay to the East India Company... at an annual rent of £10 in free and common socage."

Bombay at that time was but a cluster of seven islets covered with dense coconut plantations, and at low tide but a "wilderness of malarious mud-flats." It was even described as a "charnel house" where the life of a man was but two monsoons!

And so, when Bombay finally came into its possession, the Company began to wonder whether its retention was worth the inevitable struggle that would ensue, and the question whether it should be returned or sold back to the Portuguese was seriously debated.

But Bombay possessed a priceless asset in its natural harbour, a harbour so "...very commodious and faire, that there is now no need of pillotts but ships of any burden may goe out and in at midnight." An English sailor who was once in the employ of the Portuguese is credited with one of the earliest accounts of Bombay. "The entrance to the harbour," he wrote as early as in 1628, "is a large channel where ships of greatest burthen may boldly enter laden and ride lanlockt within a bay, free from winds and weather."

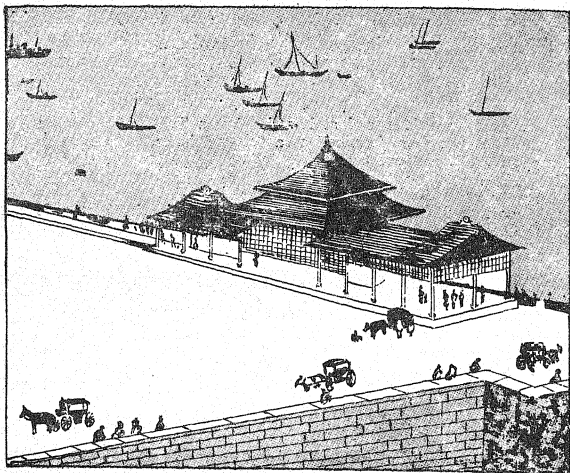
The authorities in Lisbon were soon to realise their folly in having parted with Bombay. The Portuguese Viceroy, Antonio de Mello de Castro, immediately on hearing of the transfer of Bombay to the English, addressed his Sovereign thus: "I see the best port Your Majesty possessed in India with which that of Lisbon cannot be compared treated as if of little value by the Portuguese themselves. I considered also that Your Majesty has no other place to recover and shelter Your Majesty's ships and the galleons of your fleet when that bar is closed. The English once there and the island fortified Your Majesty will lose all to the North as they will take away all Your Majesty's trade." He went on to say, "I foresee that India will be lost the same day on which the English Nation is settled in Bombay"—a prophecy that was to be fulfilled to the letter!

The Portuguese endeavoured to retrieve the position even to the extent of offering to purchase the island back from Charles, but he is said to have asked for such an exorbitant sum that negotiations broke down. The die was cast. The wheels of fate began to grind, and in 1667 the East India Company transferred to Bombay from Surat the presidency over their other establishments, and Bombay continued ever since as the capital of their dominions in Western India.

URBS PRIMA IN INDIS

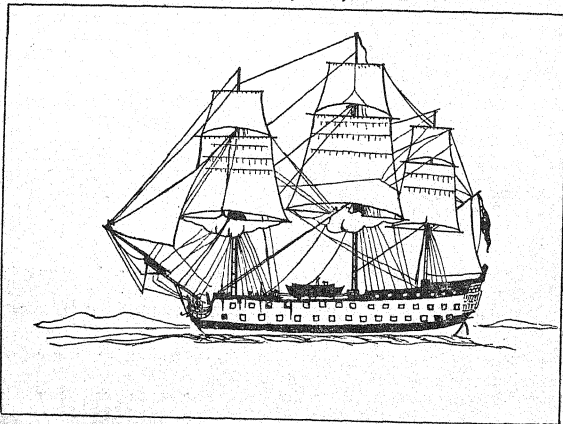
Many tomes are available on the history of Bombay, and the material is so rich and abundant that the narrator's difficulty lies only in selecting those facets of an inexhaustible and varied story that are likely to interest his particular circle of readers.

Bombay today is rightly claimed to be the "Urbs prima in Indis." Its development over the years has been nothing short of spectacular. Reclamation has so changed the face of the city that landmarks familiar to even this



The iron shed after the style of a Mongol Tent, which, before 1911 occupied the site where the GATEWAY OF INDIA now stands.

A British 74, typical of the many ships built in the Bombay Dockyard of Indian teak for the Royal Navy.



generation have largely disappeared, or have been dwarfed by new structures. The dungeons and walls of the old Castle are today a part of the Navy's Castle Barracks. St. George's Hospital now sprawls on the site of the old Fort George—a gnarled and rugged segment of the ancient wall can still be seen abutting on Frere Road. The Fort area of today, Rampart Row, Gunbow Street, etc., are relics of an era when all worthy citizens retired behind barred gates at dusk and dared not emerge again till the comparative safety of a new day!

As late as in the early nineteenth century partners roamed at large on Malabar Hill, and dacoits infested the islands. But progress had already started. With its fine natural harbour described by an early British Governor as "...the finest, largest and securest in all these parts of India, where a hundred sail of tall ships may ride all the year safe with good anchorage," it was inevitable that business and commerce should be attracted on an unprecedented scale to the "seven little islets."

THREE FORTUITOUS EVENTS

The pace of development and expansion was precipitated in the mid-nineteenth century by what can only be described as three very fortuitous events.

In 1853 a railway was opened from Bombay to Thana, a mere twenty miles of iron road. But it was a very significant event for Bombay. The British capitalists who had ventured into this field had been apprehensive whether the "natives" would take to the new-fangled contrivance for travel. The great success of the Bombay-Thana line set their doubts at rest, and a vast railway building programme throughout India, stemming from Bombay, was the result.

In 1854 the first of Bombay's cotton mills had been established, but it was the outbreak of the American Civil War in 1861 that created a tremendous impetus for trading in cotton, and today the tall chimneys that pierce the Bombay skies bear eloquent testimony to India's largest concentration of cotton textile mills.

And finally, the opening of the Suez Canal in 1869 opened up a speedy and direct route between east and west, and it was Bombay, situated on the western seaboard of the Indian peninsula, that was selected as the natural eastern port of call for both east and west-bound traffic.

NAVAL DOCKYARD

And what of India's Navy, or rather its forebears, while history was thus unfolding? The Service continued to be known as the "Honourable East India Company's Marine" till 1686, when its designation was changed to the "Bombay Marine." In 1735 the present site of the Naval Dockyard was acquired and developed as a ship building and repair yard. After an exchange of correspondence between the Court of Directors and the Bombay Council, the former had eventually accepted the necessity of, and agreed to, the construction of a dry dock at Bombay as early as 1689. However, delays had ensued, and it would appear that even as late as 1721 essential work on ships was carried out in the open or under improvised "cadjan" sheds.

In 1723 the Bombay Council finally submitted a plan drawn up by a Captain Elias Bates for a wet and dry dock, and the dry dock known today

as the Upper Old Bombay Dock—which incidentally was the first to be built in India—was completed by July 1750. A middle and lower portion was added to this dock in quick succession to meet the increasing demands made on the dockyard. However, even these expedients did not serve to meet the ever-growing volume of marine traffic cluttering the port of Bombay, and by 1767 the Council was once more looking around for ways and means of improving the facilities available in their Yard.

But again the question of improving the Marine Dockyard and that of building new docks remained undecided for many years. For one thing, communications were slow and the Court of Directors in London desired to be consulted on every point. As hard-headed businessmen they had to be convinced that the contemplated expenditure was indeed necessary, they had to be sure that returns would be handsome, they had to be satisfied beyond doubt that the plans were sound and the right men were entrusted with the project. The process was slow and cumbersome, and it was not until 1806—after one abortive attempt despite all the precautions—that a Captain Cowper of the Army Engineers was entrusted with building a new dock. The work of clearing the ground took a year and actual construction commenced in 1807.

The main impetus for the new dry dock was the wish of the British Government that the Company should build a ship of the line and a frigate of teak annually at Bombay for the Royal Navy. And so, on Nov. 28, 1807, the Upper or Building section of the new dock was reported ready to receive the keel of a "74"—the MIDEN. Her silver nail, symbolically uniting her stem and keel, was driven in on New Year's Day, 1808, by the then Governor of Bombay, Jonathan Duncan, and in his honour the new dock was named.

SLIPWAYS BUILT

Three large building slips still exist today adjacent to Northbrooke House, the official residence of the Flag Officer, Bombay, close to the old Royal Yacht Club Building. Work on these slips was commenced in 1841. They were originally constructed to cope with the increasing orders for ships of the line which began to pour in. Hitherto, ships had been built in dry docks and floated out when ready, but this method was dependent on the availability of vacant dry docks—and dry docks were expensive and time-consuming projects in themselves. Slipways were considered an attractive alternative and so, eventually, three were built.

They were originally protected against the elements by cadjan roofs, and apart from the replacement of the cadjan by corrugated iron sheets, they stand today very much in their original form. The great height of the trusses and roofs give an indication of the size of the vessels built in them in their heyday, the largest being H.M.S. Meeanee of 2591 tons launched on Nov. 11, 1848.

These slipways are a remarkable legacy from the era of the sailing ship, a great number of which was built in Bombay for the Royal Navy—in fact, the only ships built outside the United Kingdom. Today the slips are employed for the repair of boats and the smaller harbour craft.

The present breakwater was first constructed between 1816 and 1846. Part of it collapsed in January 1896, and it was finally reconstructed as late as 1906. With the post-Independence Dockyard Expansion Scheme, the

breakwater has come in for more changes, and soon it will bear hardly any resemblance to the original pile of stone that once jutted into the sea.

The Wet Basin and Torpedo Dock was constructed in 1890 according to plans prepared by yet another officer of the Royal Engineers—a Captain Porter. Its cost, together with the cost of certain improvements to Duncan Dock which was taken up at the same time, was calculated at Rs. 16½ lakhs.

DEVELOPMENT OF THE NAVY

Many an old-timer in the Navy today will recall H.M.I.S. Dalhousie, that ancient but remarkably well preserved hulk that lay alongside the breakwater and served as the home of the Boys' Training Establishment for many years. It was as late as in 1941 that the B.T.E. was transferred to H.M.I.S. Bhadur, on Manora Island off Karachi—the first permanent training establishment ever to be built for the then Royal Indian Navy. The Dalhousie, after having undertaken many roles and undergone many vicissitudes, its mission finally completed, was thereafter towed away to Karachi and sold as scrap.

Even as recently as 1940, the only "barrack" known to the Indian Navy was the large tin-roofed shed that stood where the inner end of the new Cruiser Graving Dock now protrudes into the land. In the early days, one half of this shed housed the broadside messes for the men, the Chiefs and Petty Officers' Mess and the ablution compartments. The adjoining verandah served as the canteen and galleys (cookhouses). To the rest of the shed was assigned the multi-purpose role of dormitory, gymnasium, muster-shed. A certain ingenuity was employed in achieving this—along the centre of the hall ran a raised gallery fitted out with shelves, and on these shelves were stowed in orderly rows and tiers camp cots for the sailors.

In the ears of how many a veteran does the "pipe" or order "Down Bedding" still echo? One recalls with nostalgia the scramble set off by this pipe—a good-humoured rush up the steps and on to the gallery to bring down the cots and capture positions of vantage. Near a door or window perhaps for a larger share of fresh air, or may-be near a light to read till "Pipe Down", or yet again alongside a pal to swap yarns and talk about home and the good old times!

In 1939 the first batch of Artificer Apprentices for the Service was recruited, and a barrack was built for them near the Dockyard Sawmill. This also was largely constructed of corrugated sheets, and though commodious, the gallery idea for stowing camp cots for the day prevailed. This shed still stands, but now serves as one of the Dockyards workshops.

In 1941 Castle Barracks was completed and to it the Depot was shifted. It had been planned to accommodate the maximum expansion in personnel envisaged at the time, but with the outbreak of World War II in the meanwhile, it was woefully inadequate even from the date of first commission.

About the same time, the old and historic Marine Office, situated where the Lion Gate of the Dockyard now stands, was demolished to provide for the increasing needs of the Yard. Formerly, in this building was housed the Royal Marine Office—Naval Headquarters in embryo before it was transferred to New Delhi at the outbreak of the last World War. The "depot" or Drafting Office, the offices of the Controller of Naval Accounts, and various Dockyard offices were all at one time gathered together under this one roof.

Before the opening of Lion Gate, the principal entrance in the Dockyard was the "Main Gate" under the clock tower, which still broods over busy Apollo Street. There is every reason to believe that this gate was in existence before 1750. Today, the old gates are permanently closed, but through this archway have passed many illustrious and historic figures—governors, admirals and generals. The Honourable Jonathan Duncan already referred to for instance, perhaps Robert Clive, certainly Lord Wellington and even the young Nelson.

RAPID EXPANSION

Yes, indeed, it is difficult to appreciate the tremendous changes that have taken place over the past few decades. To give a typical example—how many Servicemen proceeding daily to and fro along Colaba Causeway realise that barely a century ago their journey would have had to be performed by ferry? Colaba was joined to the island of Bombay by a ledge of rocks over which the sea flowed. The landing place on the island of Bombay was the spot where Colaba Police Station now stands. A causeway was first projected in 1820, but started only in 1835, completed in 1838 and widened and improved as late as in 1863, for, earlier, it was apt to be flooded at high tide!

The sea seems far from the busy thoroughfare that is Colaba Causeway today. Huge buildings stand where ships once rode at anchor, or were moored alongside for the discharge and receipt of cargo, handled by "...hundreds of coolies who worked in each other's way to the great expense of money and time" as one frustrated factor complained, before the first mechanical cranes came to the rescue.

The Municipal Corporation was started in 1812 and the first Municipal Commissioner was Arthur Crawford, whose name is perpetuated in Crawford Market which he conceived and had built. Aarey Milk Colony, probably modern Bombay's greatest boon, in the centre of Salsette Island, was once thick jungle where an author writing in 1783 tells us "...the Governor and most of the gentlemen of Bombay go annually to hunt the wild boar and the royal tiger."

A PEEP INTO THE FUTURE

And now a quick peep into the future may serve to round off this sketch. The Bombay Municipality's Master Plan for Greater Bombay was published in 1948. It is the blue-print for Bombay's future development. It has set aside areas for industries, housing estates, parks and markets. It has laid out the types and routes of new highways to link each locality and to ease the increasing traffic problem. Bombay will expand by further reclamation, and Salsette will grow substantially. Satellite towns have been projected and there is every indication that the city will spread over to the mainland. Already a great industrial area has sprung up out of the waste land at Trombay including two "silver cities"—the Burmah Shell and Esso Refineries, Tata's Thermal Station and the Reactor and ancillary buildings of the Atomic Energy Establishment.

Along the Agra-Bombay Road from Kurla onwards many new factories have started production, and still more building activity is very much in evidence everywhere.

Greater Bombay as reorganised on February 1, 1957, covers 174 square miles with a population of over 35 lakhs. Nearly 500 taxis ply her roads and even 750 buses are unable to cope with her road transport requirements. Long suburban trains running every two minutes at peak hours are unable to meet the needs of the hosts of workers who travel to and fro every day. A scheme has recently been approved to lay two additional lines between the suburban stations of Mahim and Bandra so as to augment the line capacity which, with 565 trains a day, has reached saturation point. The scheme when completed will permit 735 trains to be run daily.

A counter-proposal, to construct an underground railway instead between Churchgate and Bombay Central stations, has been advanced by the City Fathers. They point out that the land thus made available will permit the Express Highways to be extended to the southern end of the city. The Express Highways at present terminate near Mahim and Sion. Their extension to the Fort area will certainly help clear the heavy traffic emanating from the business and commercial centres in southern Bombay—traffic which is expected to increase tremendously when the Back Bay Reclamation Scheme, now under way, is completed, and the new commercial centres contemplated by the Government spring up there.

The "seven little islets" of Bombay are bursting at their seams—all the inconveniences of over-crowding are becoming more and more acutely felt. The creation of Greater Bombay has hardly helped this situation, apart from keeping new industries away from the islands. Entry to the south is still restricted to causeways that are veritable bottlenecks, and hamper movement a great deal, bringing motor traffic practically to a standstill. It is only necessary to attempt to traverse the city from south to north of an evening to be caught up in some of the worst traffic jams imaginable. Obviously, the answer is for the city to "expand" eastward—towards the mainland. A tunnel or bridge must span the less than two miles gap to provide a direct link between Bombay and Trombay and on to the mainland. Then indeed a vast city will spring up on the east side of Thana Creek, and in the process the route to Panvel and Poona will also be cut by 20 miles.

Constituted as Bombay is, this is inevitable—as inevitable as it was for San Francisco and Sydney similarly situated. And when this comes about, the face of Greater Bombay will change beyond all recognition—even as it has already changed in our own generation.

THE MYSTERIOUS RIN SEN

By H. I. S. KANWAR

THOUGH much water has flown down the Brahmaputra River ever since news was first flashed to the world a few years ago about the existence of the Yeti—the Abominable Snowman—it has yet to be decided whether this mysterious creature is human, sub-human, or just plain animal. Apart from the regular and officially sponsored expeditions, there are also a number of private individuals, adventurers and racketeers conducting hunts on their own for the elusive Yeti. Some of these persons are genuinely interested in the matter, desiring to learn more about the Yeti. Others are just keen collectors of curios, for whom any part of the Yeti, be it a claw, fur or tooth, would suffice to enrich their respective collections and satisfy their fancies. There are also those who want to get hold of a real specimen of the Yeti to create a sensation, and yet others who are out to make a fortune out of the racket, while the going is good.

Last but not least, there are a number of self-styled explorers with ample financial and other resources at their disposal, who, for some reason or other being unable to venture out personally to the dangerous snow-bound slopes of the Himalayas and therefore may be called arm-chair mountaineers, are engaged in the attempt to obtain the Yeti in Kathmandu, the capital of Nepal, itself! And why not? Only about a couple of months ago, rumours were rife in the bazars and lanes of Kathmandu that a Yeti had somehow found its way there, and by sundown tongues had wagged so much that not only the whole capital but also the countryside around learnt about it.

But, where was this Yeti, and how could one get a glimpse of it? None could specifically answer these questions, and those who claimed to know something about it were unwilling to open their mouths, except for a price! News of the existence of the Yeti in Kathmandu was the favourite topic of discussion and gossip amongst the foreign tourists and residents in the hotels. By the time the sun had disappeared below the horizon, enterprising folks had organised themselves into search parties, and were soon on their way in an attempt to unravel the mystery.

ON THE TRAIL

A friend of mine, who had recently been to Kathmandu on holiday, related to me an unexpected experience in the company of erstwhile adventurers in the Nepalese capital. While engaged in idle gossip with fellow-travellers on the Yeti topic, one of the latter offered to draw a rough sketch marking it with the spot where the Yeti was likely to be located, according to the information received by him from his Nepalese servant, who in turn had picked it up in the bazar.

No time was to be lost, and though it was dark, a group, including my friend, sped on the trail of the Yeti, helped by a friendly moon. In a region, strange to them, progress was bound to be slow, the snake-like narrow lanes of Kathmandu were difficult enough to recognise even by day. What is more, soon after sunset, the local Nepalese bolt their doors, and are very reluctant to open them, especially to strangers. There was an eerie atmosphere all round, for which there was no tangible explanation, and except for the occasional barks of stray dogs and the sound of the party's footsteps, silence reigned.

Ganju Lama, a local Nepālese encountered on the way, after a great deal of persuasion, polite grilling and palm-greasing, rather unwillingly gave out the information that only some hours previously, he had picked up a rumour of some authenticity that a Yeti had been offered for sale to a prospective American customer, and that this particular Yeti was not a live one but a carcass! Yes, it was only a carcass, and that too at a fabulous price. Ganju could not confirm whether the deal had been struck. Asked if he could direct the party to the possessor of the Yeti, he shook his head, adding that he did not know how or where the fellow was, because the latter had chosen to remain in the background. Ganju, however, offered the address of his friend Limbu who might be able to tell them something more.

LIMBU RELENTS

Limbu, a middle-aged man, lived with his family in an unpretentious hut, and initially did not take kindly to the party knocking at his door at that time of night. When things were explained to him and it took some explaining—Limbu confided that though the American customer had offered to buy the carcass, the mysterious owner of the Yeti had in the meantime engaged himself in making other deals, including one with an employee in a hotel, in order to make capital out of his possession. Would Limbu tell them more about this Yeti find, and where it could be located? At first, Limbu only answered with a blank stare. My friend offered a few tots of rum, which disappeared like lightning down Limbu's eager gullet. It worked wonders, for soon afterwards Limbu's face relaxed and the good man began to talk.

The Yeti in question had been found in the far north of the country at a place called Halambu (Limbu said) where a member of a local hill-tribe came upon it by accident. The hill-man did not faint, leave alone die of fright, at the sight of the abominable creature, which was dead, and incidently without an arm and feet, which appeared to have been amputated or wrenched away. Had it been killed by the local hill-men? Limbu could not say for certain. Perhaps it was so, or there may have been a battle to death between two Yetis during which the victor had devoured the limbs. Would he reveal where they could have a glimpse of the Yeti's carcass? Yes, if they cared to wait for a few days, during which he might succeed in arranging a meeting with the owner. This was too much for the adventurers, who thought by then that they had at last struck oil and the Yeti was somewhere around the corner. They thanked Limbu and left the place.

Armed with the knowledge that the Yeti carcass was actually in the capital, they decided to carry their hunt a little further, although it was almost midnight. As they continued their tour of the bylanes of the capital till they met the village idiot who, by signs and gestures, guided them to an old house around which there was an atmosphere of eeriness and the sight of which gave a shudder to some members of the party. The guide knocked at the door several times. After what seemed hours of impatient waiting, there were sounds of shuffling inside the house, and the patter of feet making their way to the door. The patter suddenly ceased, but the door was not opened; then followed an exchange of jabbering, only intelligible to the guide and the fellow inside. When an understanding appeared to have been reached, there was sound of unlocking and unbolting the door and a head peered out cautiously.

MYSTERIOUS BODY

It took a little time to convince the man that the adventurers were an honest lot and not a pack of brigands, only interested in the Yeti and not in

his womenfolk ! He then told them to wait while he went to light an oil-lamp, and then made enter. Crowding in the small room, the best they could do was to squat on the floor, on which lay a skin of some wild animal—a welcome opportunity to temporarily relax themselves, and to partake of some rum which was also offered to the host and the guide.

Settling down to business, the adventurers enquired of the host what he knew about the Yeti. The man's story gave them a pleasant shock. He confessed having a Yeti in his possession ! He said the Yeti he owned was a miniature one, which had the likeness of a human being, devoid of any hair on its body, and what was more, it was only about a foot tall. At this point, the party almost went into hysterics. What the heck was this fellow talking about? Was he sure that he owned a Yeti or just a ruddy squirrel with his fur cleverly shaved off? The fellow was quite serious and said it was a Yeti.

Here it is necessary to recall the fact that the general impression of previous expeditions in the Himalayas, including that of John Hunt in May-June 1953, was that the foot-prints of the Yeti seen in the snow measured about a foot long and indicated that the mysterious creature was over six feet tall (anything from six to eight feet tall, according to other accounts). Therefore, one of the thoughts that immediately came to the minds of the party was whether this particular Yeti owned by this Nepalese was an embryo or a prematurely-born babe, which had been shrunk in the manner in vogue amongst the head-hunting tribes in different parts of the world.

The Nepalese went further to relate that quite some time previously, he had actually seen one with all the limbs intact, and that its feet or paws, call them what you will, resembled those of an elephant or camel, the only difference being that these limbs were miniature pads. Would he care to show them the mysterious thing in his possession? Certainly he would, but not until the next day ! His belief in current superstitions would not permit him to show it right then. If they cared to agree to his suggestion, he would favour them with a glimpse of what he referred to for the first time as the "Rin Sen." The adventurers thought this to be the limit, and decided to call it a day—or rather a night. Before leaving, however, they thanked the old cory, and offered him suitable compensation for the trouble already undergone by him.

During their return journey to the hotel the party discussed the situation and concluded that having gone thus far in their hunt for the Yeti, they might as well have another try the next day; for all they knew, the Rin Sen might turn out more interesting than the Yeti.

It was not until about noon next day that they found their way again to the hut, and on arrival they found the Nepalese sorting out fire wood in his backyard. Despite his promises of the previous night, the proud owner of the Rin Sen met them with a cold shoulder and a sort of indignant look. After much coaxing, however, and the usual palm-grease flavoured with an appreciable quantity of rum (which, by the way, is the favourite drink of the folk in this region), the fellow at last agreed to show them the Rin Sen. He bade his visitors wait patiently, and then disappeared into the dark interior of the house.

10-INCH YETI

After what seemed ages, the Nepalese emerged with a bundle wrapped in a solid piece of cloth. The visitors, who could hardly wait, became restive and craned their necks forward. The Nepalese laid the bundle on the floor,

and with slow and tender care unravelled the bundle from which emerged what looked like a small lacquer box. Sensing the restive atmosphere amongst his visitors, the fellow opened the box with the finesse of a magician. And lo, there was the mystery of mysteries before their astonished eyes—the Rin Sen! What they saw was a strange creature embalmed in a bed of sugar. The Rin Sen measured about nine to ten inches in length, and was rather broken in appearance. It had a tiny face like that of a human, an almost bald head showing a lightly visible parting in the centre, two eyes without eye-brows and sort of sunken, flattish nose typical of Mongolian features, and a mouth with lips slightly on the thick side. The face appeared to bear a serene look and even a light smile was visible.

What of the rest of the mummified creature? One arm was missing from the shoulder, where the bone appeared bare and smeared with dried blood. The other arm was rather longish and though the hand (or foot) was missing at the stub and where should have been the wrist, or ankle, it extended well below the buttocks of the figure. The trunk was longish too and appeared somewhat out of proportion to the head and the rest of the body. The head rested cosily on the shoulders, and the neck was hardly visible. The legs were not complete either, and appeared to have been amputated at the things, the stub-ends of which were also smeared with dried blood. One of the points that came to the notice of the deeply interested onlookers was that the mysterious Rin Sen seemed to possess genitals similar to those of an ape. In general, the creature was dark in appearance,

The adventurers were keenly interested in inspecting the Rin Sen further, and being armed with cameras itched to photograph it. My friend related that before he could open his camera, the Nepalese smelled what was coming, and immediately snapped down the lid of the box! No amount of coaxing or pleading had any effect after that. What would he charge for the mummy if they desired to buy it and he consented to part with it? For a moment, the fellow almost sneered as though he had been insulted, and then studying the eager looks on the faces of his prospective buyers, he seemed to relax; and then he stated his price — nothing less than £350! Taken aback by the fantastic demand they departed after exchanging courteous good-byes, for they could ill afford to annoy the Nepalese — just in case they really decided to pool up their resources to procure the Rin Sen.

Back in the hotel, the adventurers discussed the Rin Sen. Was it a shrunken Abominable Snowman babe, or just another oriental fake—a carving out of some kind of special wood treated to give the mummy the look of a miniature human?

RARE PLANT ?

In the evening, during their wanderings on the outskirts of the capital, they picked up a clue from one Gurung, a native mendicant, who directed them to the home of a Nepalese in the heart of the capital. So back they came. They found him fairly easily, as he happened to be an educated fellow of some standing. This new informant conjectured that the Rin Sen was far from being a Yeti or the Abominable Snowman. At last, they were glad to be on the right track. He added that the Rin Sen was in fact a kind of rare plant having medicinal qualities, and grew in certain isolated spots on the slopes of the Himalayas, and that there was knowledge of instances of Rin Sen finds in neighbouring Tibet.

The Nepalese further related that when a Nepalese delegation visited China some time ago, the Chinese hosts presented each member of the group with a Rin Sen embalmed in decorated lacquer boxes. The group prized the gift highly, and as one member revealed authentically, the Rin Sen, called the Sen Sen in China, cost around £300 in that country.

When my friend told me about the Rin Sen being a rare plant, I began to wonder whether it was the "Mandrake", about which my copy of Webster's Dictionary states: "n. (AS. mandragora, fr. L. mandragoras, fr. Gr. mandragoras). 1. An herb (*Mandragora officinarum*) of southern Europe and northern Africa, with ovate leaves and whitish or violet-purple flowers; also, its large forked root, the subject of many superstitions, esp. that eating it is supposed to promote conception. 2. U.S. The May Apple." An English dictionary reveals that the mandrake is a "poisonous narcotic plant of the potato family, subject to many fancies."

Here, I would like to record something my grandmother related to me many years ago, when I was twelve. One day, along with other members of the family. I listened to Granny's interesting stories, some perhaps legendary and bordering on mythology. Apart from this world of humans, she once related, there existed two other worlds. One of these worlds was that of the "Githmuthias" or pigmies, whose height was equal to the "gith", (in Punjabi language, the distance between the tips of the thumb and the little finger when the hand is fully stretched), about nine inches.

This world of pigmies, said Granny, existed somewhere under the earth, and went further to relate how, when a well was being dug in a village close to her home in the Punjab, the well-diggers suddenly came across a small strange creature, very much human in form and likeness, which was found at the bottom of the well. It was with some difficulty that they managed to catch the little fellow and brought him to the surface, and all the while it emitted cries like those of a small baby and wept profusely. The creature expired a few hours after it had been brought to the surface of the earth. Hundreds of village-folk from the area around gathered to see it. What happened to it eventually, said Granny, none seemed to know.

The other world was that of the "Naugajias" (in Punjabi language, "nau" means nine and "gaj" means yards), giants who were nine yards tall! This world was somewhere above, related Granny, pointing her quivering finger to the stars in the skies. Those giants were highly clever and it was said they occasionally visited the earth. Whenever espied by humans, the "Naugajias" gave the latter such a fright, which invariably resulted in death, because the giants were horrible looking. I sometimes wonder whether Granny was referring to the inhabitants of the planet Mars.

Returning to the main theme, where the Githmuthias and the mandrake the same thing? It may be recalled that in old medieval English literature, one may have come across references to the mandrake and the mysterious mystic rites, which generally accompanied digging it up, and the human cries supposed to be emitted by it when it was rudely transplanted.

WEIRD SEARCH

The strange background of the Rin Sen had so fired the imagination of my friend and his colleagues, that they decided to delve further into the matter. Since the supposedly only possessor of the Rin Sen in Kathmandu had

demand a fantastic price, they thought of exploring other likely spots where it might be available at a reasonable price.

Next day, the adventurers divided themselves up into groups to search for the Rin Sen in the Nepalese capital and its suburbs. By the end of three days or so, they had literally ransacked almost every imaginable spot, such as shops housing curios and so-called objects d'art, centres of activity of vairs and hakims (native doctors), quacks, folks dealing in obscure medicines and owners of junk shops, and witch doctors, who traded in all sorts of strange items such as dried lizards, frogs, spiders and rare snakes. The Rin Sen, elusive as ever, was nowhere to be found.

However, they had collected interesting material on the Rin Sen. A local native doctor revealed that the Rin Sen is a bulbous plant whose root is capable of movement and human emotion, and he even opined that it has a human mind! The plant was said to contain powerful rejuvenating ingredients, so strong that even a minute quantity could literally burst a vein or kill a person ailing from heart troubles. The Rin Sen had great powers of its own, even as a man has, so that to discover it and make a successful capture, the prospective catcher must prepare himself with certain periods of contemplation and possess the right "mantras" (magic formulae).

He disclosed that the Rin Sens live in colonies in the earth or in caves just below the snow-line. Ivory-pale in colour, covered with short blonde hair and having a rather elongated torso, the Rin Sens have a marked resemblance to humans. Their passion for promenading in the night spells their downfall, for wandering too far away from their secluded retreats, they are often unable to return before the hot sun scorches them—they then die and get mummified.

RED AND WHITE CORPUSCLES

It was further revealed by the native doctor that he remembered an acquaintance of his, an old Nepalese celibate, telling him of an occasion long ago, when the latter came across a whole colony of Rin Sens in various stages of dehydration at some distance from a place called Daulagiri in the interior of Nepal, and discovered that the freshest specimen among the Rin Sens "bled" a reddish followed by a whitish fluid when its limb was snapped. Did this indicate that the Rin Sen had red and white "corpuscles" in its "blood"? The old celibate could not say for certain. It was rumoured that this old celibate had brought a few dead Rin Sens to Kathmandu, where he had disposed of the lot for a sizable sum to an employee in the royal household.

A few days later, news reached the adventurers that the only Rin Sen existing in Kathmandu had been sold, and local rumour in Kathmandu which cannot be treated lightly revealed that an American had been successful in procuring it. With this disappointing news, the party gave up further search for the mysterious Rin Sen.

It is to be hoped that the lucky American who now has the Rin Sen in his possession will one day write about his version of the story about that mysterious creature.

BOOK REVIEWS

ORGANISING FOR DEFENCE: THE AMERICAN MILITARY

Establishment in the Twentieth Century by Paul Y. Hammond. (Princeton University Press, 1961). 403 pages. Price \$7.95.

The author has traced the history of the General Staff concept in the American Army from 1903, when the Army Reorganisation Act was passed. The differences of opinion in regard to the responsibilities of the Secretary of Defence (i.e. Ministry of Defence) and the Chief of Staff and their relationship have influenced the organisational structures of defence throughout history.

In 1920 an attempt was made by the Army and Navy to support the "Council of National Defence" concept to increase their status in body politic. On the other hand the Chief of Naval Operations wanted access to Congress over the head of the Secretary for Navy. But in 1945 James Forrestal produced a plan to maximise Presidential powers and maximise secretarial authority.

The unification of the Army itself took sometime. Not until 1942 the Chief of Staff of the Army was organised into three major Commands: the Army Ground Forces, the Army Air Forces (the Air Force was then part of the Army) and the Services of Supply, each directed by a Commanding General. The Services of supply procured all equipment required by the Ground Forces or common to the two operating forces, while the Air Force was to procure all equipment peculiar to it.

The Air Force was formed as a division of the Signal Corps in 1907. In 1916 it assumed a separate identity but continued to be part of the Army throughout World War II until 1947 when it was formed into a separate Department. Both Army and the Navy had opposed a separate Air Force on the basis of enforcing the principle of unity of Command. The Joint Chiefs of Staff, on the other hand, were never effective as a joint body even during World War II. This was highlighted in the Casablanca conference when the President had warned the American Chiefs of Staff to go with one coordinated view before meeting the British. As summed up by an American participant in the conference: "we came, we listened and we were conquered".

Due to lack of coordination among the Chiefs of Staff, examples are quoted of the Chiefs asking for supplementary grant of \$9 billion in 1949, to be cut by the Secretary of Defence arbitrarily to \$3.17 billion to bring the figure close to \$3 billion, the ceiling set by the President.

With the centralisation of their military command functions of both the War and Navy Departments in their military Chiefs, the problem of civil administrative control came to rest on the Secretary-Chief relationship which was dependent upon the characters of the individuals concerned and the military traditions established in the past. On the other hand, the Joint Chiefs of Staff continued to be ineffective with the growing inter-Service rivalries and this made the Secretary's task more difficult.

"With the outbreak of Korean War, the Defence Department faced three major tasks: the direction of war itself, the long-term expansion of the Armed Services and the acceleration of the re-armament of the allies". This brought

the Joint Chiefs of Staff close to the State Department encouraged by General Marshall as the Secretary of Defence. Under the stress of war, the Joint Chiefs of Staff opened up considerably. The Secretary of Defence himself attended some meetings.

The Eisenhower administration, not satisfied with the confused authority of the civilian in the joint military responsibility of the Chiefs of Staff, assigned the Rockefeller Committee the task of examining and recommending changes in the existing Defence Establishment. The Committee was asked to give special attention to the position of the Secretary of Defence and his relationship with his principal civilian and military officials. Among the criticism which sound very familiar in India was, "From the end of World War II until the Korean War, with few exceptions, the Services were inclined to neglect research and development for new weapons and weapon systems in their concern over shrinking in-being military capabilities". Thus a major question posed was: "What role should the planning for, and the expectation of, new weapons systems play in the strategic planning process of the Joint Chiefs of Staff?"

The Rockefeller Committee report recommended the strengthening of the Secretary of Defence:

- "(1) by the clarification of channels of authority through him and through the Services Secretaries.
- (2) by building up the Joint Strategic Survey Committee into the Committee of elder military statesmen.
- (3) by bringing into the Joint Staff and to JCS Committee civilians with relevant experience and increasing the effective contacts of the Secretary and his civilian assistant with the JCS Committee and Staff."

The Committee, however, accepted the need for Joint Chiefs of Staff but suggested bringing in engineering and scientific experts at the early stages of planning and giving it Staff responsibility only. The Secretary of Defence was to have ten Assistant Secretaries instead of three, abolishing various boards and agencies. The report led to the issue of Reorganisation Plan No. 6 by President Eisenhower.

Among the reasons given for the failure of Joint Chiefs of Staff to function satisfactorily were: that it was not possible for it to function in a staff responsibility without the command authority which was only vested in the individual Chiefs; and that the Secretary of Defence was made superior in command authority without the staff necessary for the development of policy programmes. Within itself, due to JCS's closed character, it had maintained a barrier against non-military experts, civilians and even the Assistant Secretaries and the Secretary of Defence.

The author has also well analysed the authority and responsibility of the JCS and its structure. The powers of the Chairman have also been given great thought based on past experience. No satisfactory answer, however, has been given regarding the powers of Chairman JCS and the responsibilities of JCS as a joint body.

In his conclusion the author has made a comment worth noting:

"... the centralisation of power both in the civilian side of the Secretary of Defence and in the Joint Chiefs of Staff has increased, and

as the traditional approach to Service roles and missions and service-oriented strategy have become less and less relevant, the problem of achieving effective civilian control without jeopardising the effectiveness of centralised military planning has grown apace".

A very stimulating book indeed, but is repetitive in arguments. It provides an excellent background study of the American Defence Organisation. Many of the problems raised and the criticisms levelled against the civilian and military structures are equally applicable to our conditions in the country.

The vital role of the Minister of Defence as a political official responsible to the Defence Committee of the Cabinet and to the Parliament, the influence of Parliament, if any, on the strategy of defence of India, the unification of Chiefs of Staff and their effectiveness, powers and authority; and the need or otherwise for a Chairman of Chiefs of Staffs are among the numerous problems that need a study in India as well. Clear definition of responsibility and the line of authority and even a reorganisation of the Services to meet the role of the Services since independence are major issues which need an examination.

This book provides the background material for all such examinations. It needed the Korean War to highlight the shortcomings of the American defence structure in the post-World War II years. We may review the defence structure in India to ensure its effectiveness before any such calamity befalls us.

B.D.K.

"The Story of the French Foreign Legion" by Edgar O'Ballance (Faber & Faber, London, 1961). 271 pages. 30sh.

This is a regimental history, but as the author points out, with a difference. It is also a study of a regiment which has to its credit a background of fighting which often puts the romanticised fiction built around it to shame. And its battles range from 1831, when it was raised, to the present, and that too covering if not from "China to Peru", at least from "Indo-China to Mexico". It is only during the last few months that with the independence of Algeria is it moving away from its home, and also its main stamping ground namely Algeria, to Metropolitan France, and for the first time during peace.

There are many things strange with this Regiment, if it can be so called. Its soldiers cannot be French, except in times of war, but almost half its officers have been French. In its ranks have fought men of almost all nationalities, and many under "nom de guerre", keeping their identity to themselves, and no questions are asked. Its ranks have seen German fighting against their country; others have deserted to the enemies of France and fought against the French, sometimes against their own Legion. The Germans claim that Dien Bien Phu was a German battle, as the majority of Legionnaires in this epic struggle were of that nationality. The Legionnaires have not only fought, but built roads, forts, and barracks, and their permanent home—their Regimental Centre at Sidi-Bel-Abbes was built by their own labour. Their ranks have always been able to produce craftsmen and technicians and as the author points out, the food served in the Legion is of the very best he has tasted in any army unit in the world—no doubt from the excellence of its cooks. The Legion has become a wealthy corps, being a landowner and having a healthy bank balance. It runs a rehabilitation and convalescent Centre, where artificial limbs are fitted and all disabled legionnaires learn a trade.

But all this is by the way. To the Indian service reader, what strikes most when reading this book is the fighting spirit, its tenacity in battle, especially against heavy odds; the almost suicidal tendency in battle, which has made the Legion one of the finest fighting forces in the world, especially when it has to produce these results from a somewhat motley collection of men. The secret lies of course in the inculcation or more correctly the indoctrination of its regimental spirit. "The legionnaires were steeped in its past glories and persuaded that they must emulate, and even better, its former heroes, and die for the Legion, if necessary. The men are persuaded that there is no regiment on earth like the Legion, none has fought so well, none will fight so well in the future, . . . and it is the legionnaire's greatest degradation to let the Legion down". Ceremonial as well as custom are both brought into play to emphasise fully the Legion spirit. On Camerone Day, to celebrate the historic and yet desperate fight in that derelict Mexican farm, every legionnaire, no matter where he may be, is paraded and an officer reads out an account of the battle. At their Regimental Centre it is made into an impressive ceremonial parade, where the false hand of Captain Danjou, the Legion Commander of the Battle, which was found in the debris at Camerone, is trooped in front of the men.

These indeed are sobering thoughts, especially in these modern times, when it is often believed that fanaticism in battle is often possible only by political indoctrination, and one often comes across what looks like mere lip-service to the Regimental spirit, a spirit of which there should be no dearth in our army.

A.M.S.

A Biography of Field Marshall Sir Henry Wilson by Basil Collier (Secker and Warbeck, London, 1961). 362 pages. Price 30sh.

This is a biography of F. M. Wilson, who was Chief of the Imperial General Staff from February 1918 to 1922, having served in Burma, the South African War and World War I. Wilson left behind forty-one volumes of his diaries starting as early as 1883 when he was hardly eighteen, and ending the night he was murdered by Irish gunmen in 1922, after he had retired having refused an extension of his term as C.I.G.S., and when he had been elected to Parliament. These diaries were unfortunately used in an official biography as early as 1927, in which the then biographer cast his book mainly in the form of a series of extracts from the daily jottings—and this too from diaries meant primarily for its writer's own eyes. This naturally lead to a great storm, and a man who in life had a host of friends and hardly any enemies, found himself after death in exactly the opposite position, and his reputation was aspersed in a large number of books published in the last thirty years. Basil Collier after two years of research has come out with a biography in which his hero comes out in shining light.

The author claims that the history of World War I and its aftermath will never be understood until justice is done to Henry Wilson. According to him, had this brilliant soldier's advice been followed, the Germans might have been defeated within the first six weeks of battle! It might also appear from the book under review, that during the period except for Wilson and a small handful of men, the British and the French were completely devoid of any men of ideas, imagination or even real patriotism. Soldiers and statesmen are shown up—the former rigid, unimaginative and extremely touchy, and the latter keener to keep themselves in office rather than setting about the right way to win a World War. The author says "ever since he became Director of Military Operations in 1910, Wilson had complained of the failure of the British government to give the

soldiers a lead by defining their foreign policy." He also says of a momentous conference held in 1917, and long after the War had been going on with disastrous consequences to the Allies: "Scenting the threat of government interference, the soldiers summoned to Chantilly made haste to subordinate their plans to Joffre's as a lesser evil than dictation from statesmen." This then in a nutshell is the basic trouble between the "frocks" (from the frock-coats worn by politicians) and the "Brasshats" (or the generals). And it makes squalid reading indeed especially in the face of the enormous casualties suffered.

The reader might well ask whether such a situation really could have existed, especially after reading the detailed accounts of the preparations and conduct of the War in Lord Hanky's "Supreme Command". Possibly our author has laid it on too thick in order to cover up some of the mud which might still be sticking to his hero. On the other hand, the mere existence of Committees, (even the Committee of Imperial Defence) cannot make up for trust, insight and understanding between the government, its allies and its armed forces. Even where the best devised machinery exists, the men to run it must be interested in seeing it run. This then, would be the lesson of this book to the senior service and civilian reader in this country, which not having had the misfortune of a major war to date, might learn better a lesson at someone else's expense than at one's own.

A.M.S.

Himalayan Endeavour edited by B. G. Verghese. (The Times of India Publication, 1962). 155 pages. Price Rs. 10/-.

That mountaineering as a sport has come to stay in India and has made surprisingly rapid strides is evident from the record of nearly two dozen Himalayan peaks climbed or attempted by Indian mountaineers in less than a decade.

Most Indian expeditions have had their share of publicity. Equally detailed stories of these climbs have been published in various newspapers, magazines and journals, in the form of despatches by the leaders of the expeditions. An account of the first Indian attempt on Everest in 1960 has been adequately described in the "Lure of Everest" by the expedition leader Brigadier Gyan Singh. All the same there was a need for a book giving the complete saga of Indian mountaineering. This lacuna has been filled by "Himalayan Endeavour" edited by B. G. Verghese.

As the title implies the book gives an up-to-date account of Indian attempts on Himalayan peaks from the time the famous Pundit Brothers started setting up stations at hitherto inaccessible heights for their triangulation survey of the formidable ranges. In the introductory chapter the editor generally describes the Karakoram and the Himalayan ranges and also brings out interesting mythological association of the names of various peaks. In the next chapter collaborating with Sohan Singh, B. G. Verghese briefly sketches the area of exploration up to the attempt on K2 in 1909 when, having reached a height of 24,600 feet the leader, the Duke of Abruzzi had climbed higher than any other human being. "Because it is there" is yet another chapter by the editor which is full of particulars of mountaineering activity starting from the first ascent of Trisul by Longstaff in 1907 almost to date. This is an interesting chapter but the reader gets the impression of being hustled through a mass of information.

The Doon School has been described by Verghese as a very modest precursor of the Himalayan Mountaineering Institute and names like John Martyn, Holdsworth and Gurdial Singh have been aptly associated with the introduction of mountaineering to young Indian boys.

'Holiday on Black Peak' by J. T. M. Gibson gives some idea of the part played by yet another school master in popularising mountaineering. Lt-Gen. Sir Harold Williams led a Bengal Engineer's expedition to KAMET which failed to reach the top; but it succeeded in giving valuable experience to the team of young Indian army officers which included the late Major 'Nandu' Jayal.

From here onwards the book reads like a journal and is fragmentary although the editor has kept chronology in view. 'IAF Flight in 1953' by Nalni Jayal is followed by notes on the Himalayan Mountaineering Institute and Jayal memorials by H. C. Sarin and on Indian Mountaineering Foundation by S. S. Khera. These two champions of mountaineering have done more for this sport than is perhaps realised. A brief biographical note on Tenzing by Verghese is followed by the stories of Everest (1960), Annapurna III and Nilkantha by the expeditions' leaders Brigadier Gyan Singh, Instructor Lieut. M. S. Kohli, IN and Captain Narinder Kumar. These make absorbing reading. Notes on Alpine gardening in India illustrated with beautiful colour plates and on hill birds, butterflies and mountain fauna are welcome chapters in this book.

As B. G. Verghese says, Indian Mountaineering has within the brief space of a decade somewhat precociously come of age. Therefore it would have been appropriate to include some 'dos and don'ts' for young mountaineers as also notes on indigenous equipment.

It is a pity that more detailed accounts of other Indian climbs have not been possible.

"There are hundreds of other mountains ranging from 16,000 to 25,000 feet that await exploration and offer a splendid choice of sport. Each of these could be somebody's Everest; each possesses a beauty and secret of its own. Here then is abundant opportunity for quiet enjoyment and timeless endeavour. He who ascends to the abode of the gods might taste of nectar. And that will be his reward". Abundant opportunity indeed!

However a list of the 100 highest unclimbed peaks in the Himalayas as an appendix would have been appreciated by young climbers aspiring for first ascents.

The book has a good collection of photographs, sketches and maps.

G.S.

The Watery Maze by Bernard Fergusson. (Collins, London, 1961). 445 pages. Price 30sh.

This is the story of Combined Operations, told by Brigadier Fergusson in the lucid and readable manner associated with his previous works. It is a magnificent story of human organisation, ingenuity, determination and effort. Too much of the post World War II period has been taken up by memoirs of individuals—no doubt, actively at the helm of affairs—but coloured, nonetheless, by personal bias and a tendency to under emphasise the co-operative basis of success in modern war. This book does great service to the cause of Inter-Service cooperation and is a pointer to what is required

of the Serviceman of the future in the successful prosecution of operations. The author, well known to us from "Beyond the Chindwin" and, more recently, "Wavell, Portrait of a Soldier", has tackled his vast subject in a masterful manner. Commencing with Wolfe's storming of the Heights of Abraham in 1757, as the first classic Combined Operation within his definition, he traces a course through World War I in Tanga and Gallipoli, through the doldrums thereafter and then World War II, which saw the development of Combined Operations as an art on a massive scale, unlikely to be seen again, in the shadow of the atom bomb. The whole story of that development is here, compressed, no doubt, but told faithfully and flavoured with Brigadier Fergusson's inimitable style of anecdote and humour. The military student will renew acquaintance with the raids on Vaasgo, the Lofoton Islands, St. Nazaire and Dieppe; and will be glad to study the lessons learnt in their execution. He will also be grateful for being reminded of the necessity for detailed combined planning of these and the bigger operation in Madagascar, North Africa, Sicily and Italy. The culmination of this experience was on the Normandy Beaches in June, 1944 and it is thrilling to read of the part played by Combined Operations Headquarters in contributing to the success of that landing. Surely they had come a long way from when Mountbatten, as Chief of Combined Operations, described his headquarters as "the only lunatic asylum in the world run by its own inmates." The author concludes his work with an account of the Anglo-French landings at Suez in 1956, as the most recent example of a combined operation. This is of absorbing interest, shorn as it is of all political consideration and presented for professional study.

Brigadier Fergusson's study of Combined Operations is a must for the professional as well as the layman. It is well illustrated, indexed and served by maps and diagrams. There are some useful appendices, including a select bibliography which should be of help to the interested reader.

M.L.T.

The Franco-Prussian War by Michael Howard. (London, Rupert Hart-Davies, (1962). 512 pages. Price 63sh.

In the vast library of books on the war, this is one of the best one can expect to read for a long time, and almost every page will delight those who think that the art of war deserves serious study. It is both a book of scholarship and a work of art, a model of lucidity with facts marshalled like compact, organized military columns.

Mr. Howard in the course of his book explodes many legends and brings out many salient lessons of this war. First of all he examines the theory that the Franco-Prussian war was a 'model' war like, say, the battle of Austerlitz. The capture of two professional French armies in about two months, the carefully built-up legend that Moltke was all foreseeing, the legend that all went according to plan from the word go, hid many awkward facts and prevented many useful lessons to be learnt. The legend clouded, for instance, the cracking Prussian discipline, the Prussian Guard laid out in swatches at St. Privat, the power of rifle fire directed from strong positions and therefore the vulnerability of packed columns going into attack against the modern breech loading rifle. The lesson of course was slowly learnt and the Germans absorbed the elements of tactics in the course of the war, especially in the Bourget battle. "The German counter attack," says Mr.

Howard, "is a small landmark in military history in that for the first time the problems of infantry advancing against a position defended with breech-loading rifles had been carefully worked out. The coy columns breaking up into skirmishing lines had given way to loose lines of widely spread men, making all possible use of cover, offering small targets and advancing by bounds, supporting one another by fire."

The notable novelty in the book is Mr. Howard's insistence not on Bazaine's lost opportunity for a victory before Metz, but that the French situation was not nearly as desperate after the first frontier battles as is made out. The erroneous popular impression was perhaps partly caused by the muddled French plans, their incompetent execution to a degree that the rationalist, nimble, Moltke, who planned for the enemy's wisest moves, was baffled and thrown off balance.

It is easy enough to expose Bazaine; it is easy enough to show that if Gambetta was not in such a tearing hurry, if Faily had not been such a mug, the war would have been different, not, indeed, in the sense that the French could have won a victory, but that something like a compromise peace might have been made. But luck more often favours the fortunate as it does the brave. The Prussians recovered from their mistakes; the French failed to exploit their opportunities. So came the peace of Frankfurt.

Moltke cannot, however, be deprived of his just meed. He was the innovator of the General Staff, as we know it today. He gave the utmost importance to rigorous military training, to standards of proficiency. It was also he who introduced the system of reservists and showed how you could make highly effective soldiers out of civilians, send them back to civil life and call them up when the need arose. The army was now "the nation in arms."

Modern war is basically a matter of total mobilization, and, on the French side, it was the improvised armies and supply services of Gambetta and Freycinet which revealed the shape of things to come. They did not win but they upset Moltke's efficient and victorious military machine. From this war onwards, the conduct of any war passed out of the exclusive hands of professional military cadres into those of the people. As Mr. Howard says, "During its course there emerged for the first time the sinister problem of modern national war from which the general catastrophes of our epoch have developed." It is this which makes the Franco-Prussian war an important event far transcending the specialist field of military history.

M.J.R.

History of the Second World War: The War at Sea: 1939-1945. Vol. III. Part II: The Offensive by Captain S. W. Roskill (Her Majesty's Stationery Office, London, 1961). 502 pages. Price 45sh.

Captain Roskill has completed his monumental work describing the war at sea during the Second World War in three volumes (actually four since volume III has two parts, each as good as a volume). Captain Roskill's earlier volumes have received such profuse encomiums not only in this journal but in many other papers and magazines, in different countries, that one can only expect the present volume (the last of the series) to be equally masterly and brilliant. Nor is one disappointed in this, for Captain Roskill's presentation of this part of the story, involving as it does the greatest combined

operation in history—the Normandy invasion—and operations in the Atlantic as well as the Pacific during the final phase of the World War, is as clear, forceful and exhaustive as that of other parts in the earlier volumes. Neptune—the naval operation within Overlord, the Mediterranean Campaign to protect the Allied sea lines of communications, the battle of the Atlantic, operations in the Pacific and the Indian Ocean, and the final defeat of the U-boats have all been adequately dealt with right up to the time of the German defeat in May and the Japanese surrender in August 1945. Students of naval history interested in questions like the close and distant blockade, the relative importance of submarines or U-boats as weapons of offence or defence, the relative merits of surface and underwater weapons, co-ordination of air, sea and land forces in amphibious operations, and numerous similar problems, will find ample and authoritative material to satisfy their curiosity. Captain Roskill has rightly added at the end a very useful chapter devoted to the discussion of the lessons learnt which again go to prove Mahan's thesis of the profound influence exerted by sea power on the outcome of a modern war and consequently on history. In this chapter he has referred briefly to the use of atomic weapon of mass destruction by the Allies and though he does not seem very optimistic about scientific and technical developments being able to discover means to intercept and destroy long range nuclear missiles before they reach their targets, he considers it "inconceivable that a democratically governed country should in future consent to the initial use of such weapons". One may or may not share this hope with him, but one can have absolutely no hesitation in endorsing his view that control of the sea is a cardinal requirement for the safety, security and even existence of a maritime nation like Britain.

In the Epilogue a fitting and well deserved tribute is paid to the men and officers of the Royal and merchant navies of the United Kingdom.

The book has numerous Tables and informative Appendices, as many as 25 maps, more than 70 well-chosen illustrations and an index. A very skilful and efficient treatment of a worthy theme indeed, and one that should rank with the classic books on naval strategy, tactics and history.

P.N.K.

From the Dreadnought to Scapa Flow. Vol. I, The Road to War, 1904-1914:
By Arthur J. Marder (Oxford University Press, 1961). 459 pages. Price 42sh.

Britain's safety has long been supposed to depend on the supremacy of her sea power which had the dual role of preventing an invasion and protecting her trade with the Empire. In order that she should be able to maintain this supremacy it was necessary that her foreign and naval policy should ensure that no other power or combination of powers should equal or surpass her naval strength, and that no single power should dominate Europe. A necessary corollary of this was the independence of the Low Countries to prevent any hostile power from controlling the European shores of the English Channel. This being so, the Anglo-German relations were bound to be strained when at the turn of the 19th century the German Govt. adopted a policy of building up a strong navy. Coupled with this was the programme of the Pan-German movement, which was never officially disavowed by the German Government. Thus at the opening of the present century serious thought began to be given in Great Britain to the improve-

ment of the navy both for offensive and defensive roles. Europe had thus started on the road to war, the logical culmination of which came in 1914.

Sir John Fisher was the First Sea Lord in Britain during 1904 to 1910 which happened to be the most crucial period of the Anglo-German naval rivalry, and his personality therefore naturally dominates this volume which covers the period from 1904 to 1914. The author, Arthur J. Marder, who is the senior Professor of History in the University of Hawaii, and has also some other admirable books on naval subjects to his credit, has made the story of these years not only authentic and accurate but also very readable—in refreshing contrast to some of the dull, matter-of-fact statistic-ridden books of military history which it is one's misfortune to read and review these days.

Mr. Marder is an ardent admirer and a fan of Lord Fisher whose views and actions he has completely supported and justified, but he has not neglected to give fully all the opposing view-points. His handling of the various controversies of the day, e.g. those relating to the criticism of the H.M.S. Dreadnought or the importance of the submarine as a defensive weapon against invasion, the two-power standard, or the argument between the supporters of the bolt-from-the-blue hypothesis and the Blue-Water School, is admirably balanced and judicious.

The book is thus a 'must' for students of naval history who after reading it would no doubt look forward with pleasurable anticipation to the second volume. It has some nice illustrations, an appendix, a map and an index.

P.N.K.

The Great Siege Malta 1565 by Ernle Bradford (Hodder and Stoughton, London, 1961). 256 pages. Price 25sh.

The story of the siege of Malta by the Turks under orders of one of the greatest of the Ottoman emperors, Soleyman the Magnificent, is an epic of the long struggle between the Cross and the Crescent which raged through the middle ages. The reverse suffered by the Turkish arms in failing to subdue this tiny island, the home of the Knights of St. John, in 1565, may truly be regarded as the turning point in this struggle between the East and the West.

Soleyman who had succeeded to the throne at the age of 26 had a career of unparalleled success, and had, by his conquests in Europe, Asia and Africa, during his long rule, made Turkey the greatest military state in the world. In 1564 when he was 70 years of age he decided to conquer Malta in the spring of the next year. His aim was to make the Mediterranean a Turkish lake which was not possible without possessing Malta whose geographical position right in the heart of the Mediterranean invested it with great strategical importance. Lying south of Sicily and north of Tripolitania it commanded the main channel through which all shipping between east and west Mediterranean must pass. The Knights of St. John, who had, about forty years earlier, been driven out from Rhodes had made this island their new home after having remained homeless for many years. And the Sultan knew well that these corsairs and religious warriors of Christianity would prove as troublesome from Malta as they had done when they had inhabited Rhodes. Muslim shipping on the sea and the communications between the different parts of the Turkish empire could not be safe without Malta in his hands. In addition, the Sultan felt that the acquisition of Malta could

also prove a stepping stone to Sicily and Italy. So the word went round that preparations should be made to add Malta to the Ottoman empire next year. In time, a huge fleet carrying more than 30,000 well trained soldiers including a goodly proportion of picked Jannissaries—the crack troops of Turkey—all well equipped and provisioned sailed for the little island in April, 1565 with some of the best army and sea captains in command.

Meanwhile the Knights, who had very little time to improve or construct the defences of their new home had also learnt of the Turkish preparations; and so, under the inspiring and inspired leadership of their Grand Master La Valette, they redoubled their efforts to do whatever was possible to fortify themselves and withstand a long siege. The Turks expected to take the island in a few days, but in the event the siege lasted for many months and ultimately the huge armada returned home defeated, disgraced and badly crippled. How this seeming miracle did actually happen is beautifully described in this readable little book of 250 pages.

The numerous clashes between the besieged and the besiegers, the brave and reckless deeds of the Jannissaries, the difficulties encountered by the Turks and the strategic and tactical mistakes of their commanders, heroic deeds of personal bravery on both sides on many occasions of hand-to-hand fighting, the firm determination of La Valette and his Knights and other members of the numerically very weak garrison to fight to the last man and last round, and finally the raising of the siege, are all described in a most engrossing and interesting manner. One also gets a good glimpse of the weapons and the methods of warfare of four hundred years ago, the personal armour of the soldiers, the galleys and warships and the wretched life of the galley slaves, who were generally captured men of the opposite faith. The book also has some illustrations and sketch maps or plans, a bibliography, explanatory notes, glossary and an index. The production values are excellent. The "Great Siege" must be read.

P.N.K.

"The Fleet that Jack Built" by William Jameson. (Rupert Hart-Davis, London, 1962). 344 pages. Price 42sh.

Military conservatism has so often been responsible for defeat in battle and sometimes for national disaster. Every service has a majority easy going conservative element while a smaller band of younger men with progressive minds battle to have new ideas and methods in the shape of new material and tactical doctrine accepted in the service by more conservative seniors at the top who have the power of decision.

Admiral Jameson reminds us of such a struggle that was waged by officers like Wilson, Fisher and Scott for a period of nearly fifty years prior to the 1st World War. These were all men with a sense of purpose. It is always easy in times of peace—and most officers prefer it—to take the easy way out and keep things shiny on the surface, forgetting that the main purpose of the existence of the service is "victory in battle."

Success in war requires technically superior equipment backed up by superior tactical doctrine. The one without the other can result in failures. In a light hearted vein the author tells us how these serious minded men fought for, and fortunately for that generation of Englishmen, fought successfully for much needed improvement in doctrine and material in the British Navy.

In so doing they courted a great deal of unpopularity and risked professional ruin, in common with those whose dedicated single mindedness of purpose is rewarded only by a sense of fulfilment. The knowledge that one was championing a worthy cause was satisfaction enough. The book exposes the fallacy commonly held that service officers must get on with each other at all costs. Scott, for instance, antagonised every one but made sure his guns hit the target! Officers who lead a docile life in peace are unlikely to be able to deal with the enemy in war. Yet this is the prime reason for our existence.

To the genius of those who have forged the weapons during peace must be superimposed the genius of those who must exploit them in war. It fell to the lot of Jellicoe, Beatty and Tyrwhitt to exploit the weapons placed at their disposal after a not inconsiderable struggle on the part of those who went before them.

The more important and fundamental the improvement advocated, the more prolonged and strenuous is likely to be the opposition and greater the delay in its final acceptance. It is only the ability to reach sound decisions and the character to see them through to their logical conclusions that will enable us to outclass our enemies through superior vision. The future of the services and indeed of the country largely depends on the number of progressive thinkers who are willing, when necessary, to accept the odium of their superiors in the long term interests of the service. To them this book will provide further encouragement.

R.K.K.

The Battle of the Atlantic by Donald Macintyre, (Batsford, London, 1961). 208 pages. Price 21sh.

Much has been written and much will continue to be written on the saga of the Atlantic. So long as tales of human endurance and skill hold a place in the hearts of the reading public, so long will this saga continue to thrill and inspire.

In a well got-up book, Donald Macintyre writes of the Battle of the Atlantic; albeit critical and laboured in parts but vivid in detail and withal warm affection and respect for the human, the ordinary man who as John Buchan has written "went through it with fortitude and good humour as if it had been some kind of school, finding comfort in a new fellowship."

The author makes good use of material and post-war researches on the subject of anti-submarine warfare as is evident from the plethora of names and 'numbers' of ships and U-boats that took part in the selected battles described by him.

Great names well-known in their specialised fields are recalled to mind among them Admiral Sir Percy Noble, Admiral Sir Max Horton, outstanding Escort Group Commander Lieutenant Commander Peter Gretton and inevitably Captain F. J. Walker R. N.

Reading the book one gets the impression that the battle of the Atlantic could be likened to a game of chess with its moves and counter-moves. Western Approaches Headquarters with its efficient U-boat Tracking Room was the brain ships and their crews, the pawns and the vast grim expanses of the Atlantic, the chess board. U-boats and their 'wolf pack' tactics directed by their Headquarters were the opposing forces.

And during this battle, weather played its part—the atrocious wintry weather of the North Atlantic.

Repeatedly this point about the weather crops up in the narrative and those who have experienced it are not likely ever to forget it. Besides one cannot but admire those many thousands who took part in this battle year in and year out and though battle scarred and shaken nevertheless went on with it and saw it through.

One would wish on reading a book of this type to let one's pen run on and recapitulate instances of supreme courage of individuals in adversity, instances where on occasions both sides turned to face a common enemy—the weather, where U-boats were sunk as a result of collision among themselves, where death lurked as it were in the next waves, instances where individuals stumbled up the steep ascent of life only to disappear near the summit.

One other aspect of the book. The activities of the convoy and of the Escort though given in detail and are interesting yet fail somehow to capture adequately so it would appear the 'atmosphere' of war, the smell of battle as is said, so essential in descriptions of activity, fierce activity, in war and which if effectively employed powerfully influence the reader. Indeed more is conveyed sometimes through what has been left unsaid.

Action Photographs in fair weather and foul of ships and submarines and convoys add as they invariably do to the attractiveness of the book.

The jacket, a reproduction of a painting from the National Maritime Museum is striking.

WAR IN SPACE

Conflict in Space by M. N. Golovine. (Temple Press). Price 25sh.

Long-Range Ballistic Missiles by Eric Burgess. (Chapman & Hall). Price 35sh.

It has been well said that the history of mankind is the history of war.

As human civilisation developed and advanced, the ways in which men could fight each other also advanced and became more and more sophisticated. From throwing stones at each other men took to throwing arrows and javelins. Then came swords and spears, guns and cannon, fighters and bombers, A-bombs and H-bombs, rockets and missiles. Men learned to fight on land, on the sea and in the air. Now human conflict has entered a new dimension—Space.

Military astronautics has been moving at a fabulous pace during the last four years. The process of evolution of military weapons has been from manned bombers to strategic missiles, from missiles to orbital weapons, the three dimensioned space devices and vehicles. This trend is reflected in the transmutation of the Strategic Air Command in the United States into a Strategic Aerospace Force. Great urgency can be seen in developing and integrating new weapon systems into an aerospace force-in-being, which would be able to deter any potential aggressor from embarking on ventures that could result in a world-wide conflagration. This fact is prominently brought out by a recent statement of General Power C-in-C, SAC, USAF: 'We may think in control of space may well mean control of the globe in a future war. Hence, terms of space, although space is merely a medium and not a weapon. But as air superiority meant control of the battleground beneath in World War II,

the conquest of space is more than a race for scientific 'firsts' and national prestige. Whether we like it or not, it is primarily a question of survival."

It is difficult to have a balanced view of the field or to make a realistic assessment of future situations. The reason is that though both the books are written by experts in their fields and are packed with facts and figures, most of the recent developments are still wrapped up in secrecy. This much is certain that tremendous changes in military thinking will have to be made, old ideas thrown overboard and new concepts thought up and accepted. In the past new tactical and strategic concepts emerged with long military or technical development bringing into use new weapons. As in the past so in the future.

The authors of these excellent and thoughtful books provide an authoritative study of the ground strategy, tactics and armaments of a conflict in space, thus fulfilling a urgent need. This need is not yet properly realised by all those whose lives will be inevitably affected by the new dimension.

I would strongly recommend both these books to everybody in or out of uniform.

D.R.S.

"America's Combat Weapons" by Will Eisner (Stirling Publishing Co. Inc. New York, 1960). 128 pages Illustrations. Price \$3.95.

As the blurb says, this is a pictorial parade of most of the weapons in use in the American army, navy and airforce. Starting from the infantryman's rifles, machineguns and mortars the author goes on to describe many types of field artillery, recoilless guns, naval and A. A. guns, torpedoes, depth charges etc. There is also a long chapter on war rockets and missiles, from the giant Titan ICBM to the little Sparrow and other air to air missiles. Data like weight, range and rate of fire of each weapon is supplemented with short descriptions of its operational role. Interesting photographs of almost every weapon add to the value of the written exposition.

The book may be primarily designed to give the American reader some idea of the imposing array of weapons in his country's arsenal, but it is definitely of interest to others also. Such a wealth of factual information in such a handy publication is not available about the other major Powers. Though perhaps not as authoritative as Gen. Barnes' "Weapons of World War II", the present book should be reliable enough, carrying, as it does, an introduction by Maj-Gen. Medaris who retired recently as Commanding General of the US Army Ordnance Missile Command.

The book is invaluable as a non-technical introduction to America's principal weapons, for the general reader, and should find a place in all libraries interested in defence matters.

S.N.P.

"America's Space Vehicles; a pictorial review" by Will Eisner. (Stirling Publishing Co. Inc. New York, 1962). 140 pages illustrations. Price \$4.9s.

This is a companion volume to the same authors' book reviewed above. It is intended to give the general public a nodding acquaintance with the different American space vehicles, rockets, boosters etc.—those in actual use

as well as those planned for the next decade or so. The information given about the existing rockets is necessarily limited by the requirements of official secrecy; the author has, moreover, studiously avoided all details which could possibly give a headache to the most casual of lay readers. As a result, the sections dealing with the rockets in use is very sketchy. That dealing with the expected developments of the near future (comprising the bulk of the book) reads much like science-fiction of the popular magazine variety, with nuclear or ion-electric rocket-engines carrying giant space craft to the distant start.

However, the descriptions in the book are really simple and lucid, and the illustrations are excellent. There is a useful chronology of the space shots made so far, both Russian and American, with brief details about the size of each satellite and the scientific purpose of the equipment carried by it. Incidentally, this chronology mentions the weight of the first (Russian) Sputnik—a sphere 22 inches in diameter—as 4 tons, an obvious mistake, for which, however, the printer can hardly be blamed. As is well-known, the actual weight of Sputnik I was 184 lbs.

S.N.P.

"Aircraft and Missiles" by D. M. Desoutter. (Faber and Faber, London, 1959). 213 pages. Price 36sh.

This book covers partly the same ground as Will Eisner's "America's Space Vehicles" reviewed above. It has also similar production values, having numerous photographs and sketches, art paper printing and excellent 'get-up'. But the book is aimed at the more serious general reader willing to study aircraft and missiles, and the connected sciences, in broad perspective, as an integral whole. Formulae and mathematical equations are avoided, but the book does discuss even things like metal fatigue, the by-pass principle in the jet engine, and merits of the different guidance systems for missiles. There are chapters on aerodynamics, piston and jet engines, fuels, aircraft structures and special equipments, helicopters and V.T.O.L., aircraft and of course, guided missiles. Data on the various types of turbo-jet engines, including Russian engines, a discussion on research and development in the field, and a chronology of notable aviation dates, add to the value of the book.

The only criticism that can be levelled at books like these is that they seem to fall between two stools: they are too detailed and heavy going for the casual reader, without, of course, being adequate for the professional airman or engineer. Every author, however, has to address his work to a particular audience, and the inevitable compromise between the conflicting demands of different reader groups must be his sole prerogative. Desoutter certainly has experience in this field, his earlier book "All About Aircraft" having been popular in many countries. He has clearly brought out the immense ramifications of the aeronautical science and technology and sketched the outlines of a little known subject of tremendous importance.

S.N.P.

"Spitfire—The Story of a Famous Fighter" by Bruce Robertson. (A "Hardborough" Publication, U.K. 1960), 211 pages; illustrations. Price 45sh.

A "Hardborough" book on the Spitfire was published soon after the War, but this one is claimed to be a different book altogether. It is far more comprehensive and up to date, and seeks to give every relevant detail on the subject.

The Spitfire was certainly the most famous fighter plane ever produced. It perhaps did not shoot down over 1600 enemy planes, as the celebrated Sopwith 'Camel' did in the First Great War. Its production did not total over 30,000 planes, as did that of the German fighter Me 109. But, assisted perhaps a little by Churchill's inimitable oratory concerning 'the few', it captured the imagination of the world, and retains its place in the hearts of the multitude. There is ample excuse, therefore, for relating its story in great detail.

That is precisely what the author has done. He starts with the birth of the Supermarine works in 1912, traces the fortunes of their chief designer R. J. Mitchell, and describes the sea-planes built by him for winning the Schneider Trophy air races in the twenties and the thirties, before coming to the birth of the Spitfire itself in 1936. The first half of the book describes the construction and operations of the plane, with numerous anecdotes from various theatres of the world thrown in. The second half is devoted entirely to such strictly esoteric and professional matters as 'Spitfire Colour Schemes', 'Production Summary and Serial Allocation' and 'A Review of Marks and Variants'.

The second half of the book is not meant for the average reader, whether a Serviceman or a civilian. But after all some people may really want to know the exact difference in engine and fuselage between a 'L.F.Va' and a 'F. XVIIE' Spitfire, and similarly a complete census of all surviving Spitfires must be of interest or use to somebody. This half of the book, as already pointed out, is definitely not for the average reader, who should content himself with the 105 pages of the first half. It is a pity, however, that even this first half has technical jargon like the following:—"Machining of the housing could then commence. First it was chucked on a Herbert No. 4 automatic, then faced, bored, reamed and cut; then re-chucked on a capstan lathe and counter-bored." The reader is likely to be simply 'bored' and ready to 'chuck' the whole thing!

For somebody, however, who stubbornly ploughs through such obstacles, the book has useful pieces of information. For example, it is interesting to know that even the less complex Mark I Spitfire took 330,000 man-hours each to produce. By the time the Mark II Spitfire came in July-August 1940, the Mark I had gone through 30,000 drawing changes in the course of production. Due to the German air attacks in the Battle of Britain, the total monthly production of Spitfires dropped from 113 in August to just 59 in October 1940. But such generally interesting items of information are few. And, surprisingly enough, the book makes no mention of the IAF which also used Spitfires, though the air forces of Burma, Egypt and Israel have found a place in it.

The book is excellently produced on Art paper and has innumerable illustrations. It deserves a place in military libraries as a work of reference.

S.N.P.

"The Years of the Sky Kings" by Arch Whitehouse. (Macdonald, London, 1959). 334 pages. Price 25sh.

Compared to the massive literature on air warfare in World War II, books on the air battles of the First Great War number only a handful. Yet those seemingly far-off, archaic dog-fights have unrivalled human interest, and a definite place in the evolving history of war in the air. Therein lies the value of "The Years of the Sky Kings".

The book traces the slow and unsteady evolution of war plane—a fighter, bomber and Recce machine combined—and of its armaments, from the early shoulder carbine to the multiple machineguns. What fun it must have been to sit in the airy cock-pit of the 1914 bi-plane and aim hand-grenades at the enemy trenches and depots rushing past below one, hurling fancy abuses at any chance-met enemy planes and fearing nothing worse in return. Naturally, those old-timers were indignant when some spoil-sport let off an automatic rifle, and soon a machine-gun, from his cock-pit in the general direction of an opposing plane! The author goes on to describe the early combats in the air, leading gradually to the famous dog-fights in which Baron von Richthofen excelled. He was credited officially with eighty "Kills", before being shot down in April 1918. But another German fighter pilot, Boelke, we are told, was a more heroic figure. Dozens of other "air aces"—Germans, French, British and American—parade before us in the pages of the book, emerging suddenly into the lime-light and (with rare exceptions, like Maj Bishop) quitting the stage as suddenly, with only a rough wooden cross in some field to mark their grave. Some famous aces disappeared without a trace, like the tragic figure Guynemer who shot down fifty three enemy planes while tuberculosis ate into his vitals. He, it was popularly believed, 'flew so high that he could never return to earth'.

The author has written of these heroes with intimate knowledge, as he served alongside them in the war, and kept detailed notes, supplemented later by research in libraries, etc. The book he has now produced is a valuable history that reads like adventure fiction and is full of human interest. There are numerous photographs of the 'aces' and their different planes.

S.N.P.

The Twilight of European Colonialism by Stewart C. Easton. (Methuen & Co., London, 1961), 564 pages. Price 50sh.

Taking a panoramic view of the European continent Thomas Hardy's **The Dynasts** speaks of "the people, distressed by events which they did not cause, are seen writhing, crawling, heaving and vibrating in their various cities and nationalities". The drama which has been played on the continent of Asia and is being enacted elsewhere in Africa and the Carribean area is not less dramatic and moving than that of Napoleon's Europe.

The most notable aftermath of World War II has been the progressive recession of the tidal wave of European colonialism; the gradual unchaining of subjected societies either peacefully or with bloodshed; nonetheless the speedy eclipse of the West. This has now become an irreversible part of the historical process.

Will this political emancipation enrich human life, bring new conceptions and ways of life? It may be so, though it may not necessarily happen. Nevertheless one's attention is already claimed by the political facts—the inevitable overthrow of western empires, their replacement by national states, the retention in some of them of the Western liberal system. The spread of nationalism to Africa and Asia is the fateful single event of the past half century. What is at stake in these regions is the form of organisation of society and the character of the men of the succeeding generations which will be formed by the institutions.

It is a very great issue and will continue to be so in the foreseeable future. In **The Twilight of European Civilization** Mr. Easton discusses the

political events in the colonies and makes an appraisal of modern colonialism. "Colonialism already in its twilight, moves" he says "to its appointed end. It will soon be a phase of history to be studied by historians, and its passing governmental forms . . . will no longer be of anything but historical interest to students of government". Only Portugal is running against the tide and is seemingly immune to the wind of change. But time brings in its own revenges. The Portuguese government may soon find itself overwhelmed by the tidal wave.

Charting the political development of each colony he analyses the significant advances made and the problems to be solved. Granting independence to multi-racial African societies under British control will be the thorniest of them. But given good-will, a sincere desire to come to terms, there is no reason why it cannot be solved as the Algerian problem has proved. Without them the ultimate surrender is likely to be the end product of bloody strife.

Even though the events have already overtaken this book and will continue to do so, after all the study ends with the year 1959, a shortcoming which may be remedied in subsequent editions, it will not detract from its value as a book of reference.

M. J. R.

The Boss by Robert St. John. (Arthur Barker, London, 1961). 288 pages. Price 21sh.

An eminent American scholar-diplomat with considerable experience of West Asia recently opined that "in the perspective of history the Egyptian Revolution will be to the Middle East what the French Revolution was to Europe". The Boss is the story of Gamal Abdel Nasser, the architect of this revolution; and its narrator, Robert St. John, is an able biographer who had earlier distinguished himself as the author of *Ben-Gurion*. The title of the book is the literal translation of the Egyptian colloquial expression *El Rayiis* which is the corruption of the Arabic word *El Rayiis* meaning President.

The story begins with an intimate description of a tiny village on the bank of River Nile in Upper Egypt bearing the name *Beni Mor* or "the Tribe of the Bitter Ones", the home of Nasser's ancestors. His early boyhood was overshadowed by the death of his mother and the strained relationship with his father and stepmother that followed. At the age of seventeen he found himself in the forefront of a demonstration against the British and received a deep wound in the forehead. By the time he graduated from the military academy his hatred toward the British had intensified manifold. His first posting was at Mankabad; and it was here that he and Anwar al-Sadat first started to sow the seeds which fructified in the *coup d'etat* of 23 July 1952. Then came the war; and in the midst of the Axis advance towards Egypt the British High Commissioner, Sir Miles Lampson, presented an ultimatum to king Farouk on 4 February 1942 to accept a Cabinet of British choice or face consequences. Farouk succumbed. The Egyptian army could do nothing to protect the country from this humiliation. Angry and frustrated, Nasser and his associates decided to set up a secret society called the Free Officers. The sole motivation of the Free Officers, at this stage, was to rid Egypt of British control. Nothing else mattered; not even the partition of Palestine in 1948. But the involvement of Egyptian Army in the Palestine war ruthlessly exposed the weakness of the Egyptian fighting forces, the wanton irresponsibility of its brasshats and the hollowness of the regime headed by King Farouk. While big officials were making millions through purchase of rotten arms and the king's courtiers ordered the construction of a new boulevard for the victory

parade, the army was thoroughly routed by the Israelis and Nasser himself was hopelessly besieged at Falluja in Palestine. This added a new dimension to Nasser's political outlook: the war against the British would not succeed without first obliterating the royal regime. But the Free Officers were still not decided about the timing of the blow. A year later a five year plan was drawn up and the date for the "revolution" was fixed as 1955. But the burning of Cairo on 26 January, 1952 by an angry mob infuriated by British atrocities in the Suez Canal Zone and the political chaos which ensued convinced the Free Officers that the time for striking had come. Again, it was Nasser who master-minded the entire blue-print of the plot which brought the Free Officers to power on 23 July 1952 and forced Farouk to abdicate three days later.

A nation of twenty-one-million was taken over by a hand of ninety army officers, almost all of them in their early thirties. The rest of the story tells about how the *Coup d'etat*, falteringly, haltingly but inexorably turned into a social and political revolution of vast magnitude. At the start El Bikhashi (Colonel) Nasser had no precise ideas about what to do with his newly-acquired power. But he knew a military principle which he had learnt at the Staff College: If you are exposed on many fronts, you must make every possible effort to isolate all but the front on which you are currently making your attack. Soon Nasser found it was very useful in dealing with his internal as well as external foes. It helped him in ousting the elderly and extremely popular Naguib who had been earlier adopted as a nominal figurehead to give respectability to the 'Coup', and in liquidating the million, strong fanatical Moslem Brothers who threatened to impose on Egypt the obscure and obsolete way of life of medieval Islam.

On other fronts too he made some spectacular departures. Land-ownership was drastically overhauled. No one could now possess more than two hundred acres. The surplus land thus seized was distributed among small holders. The old titles of 'Bey' and 'Pasha' were abolished. Nasser also showed considerable maturity in dealing with the British, his foremost foe. An agreement securing independence for Sudan was signed. The British also agreed to withdraw their forces from the Canal Zone by the middle of 1956. At about this time Nehru paid a visit to Cairo at the end of which a significant official statement was issued saying:

"We must remember that there is in the world today a great force which aims at goodness and which will not permit itself to be an instrument of evil. This force is headed by India and Pakistan..... This great force representing one-third of the world, which had been used in past wars as an instrument of death in the hands of the imperialise powers, will no longer allow itself to be used as a cannon fodder in the service of imperialism in any future war."

This was Nasser's first step towards an independent approach to international problems which, in the years to come, made Egypt the bastion of neutralism in West Asia.

But the path which Nasser thus carved out for himself was strewn with countless hazards. Part of the difficulties arose from what he considered the manifest destiny of Egypt to play a leading role in the Arab, Islamic and African worlds. Moreover, he not only declared Egypt's neutrality and independence but also started exercising the rights thus acquired. In September 1955 he made an arms deal with the Soviet bloc. Earlier, the same year, at Bandung Chou En-lai had volunteered to sound Moscow in this regard and was amply rewarded for his services when Nasser recognized Communist

China the following year. Then, Nasser had also been a vehement critic of the Baghdad Pact. All this infuriated Washington, London and Paris. Late in June 1956 Dulles retaliated by withdrawing the promised American aid for constructing part of the £600 million Aswan Dam which was Nasser's desperate if spectacular solution for feeding Egypt's rapidly rising population. To this, Nasser retorted back by dramatically seizing and nationalizing the Suez Canal Company which had been operating the Canal for about ninety years. Thereafter, the tension between Cairo and the western capitals increased steadily until it exploded into an open war for the control of Suez. Nasser's armies were routed by the Israelis in the Sinai Peninsula. The French and British paratroopers landed in the Canal area. But world public opinion, law and the U.N. were on Nasser's side. He lost the battle won the war. Besides, the whole Suez affair enhanced Nasser's stature in the Arab World. It even appeared that his long-cherished dream of uniting the Arab world was nearing fulfilment. The merger of Syria and Egypt, together containing half the population and one-fourth of the area of the Arab East, in early 1958 lent added credence to this view. Supporters of Nasser everywhere in the Arab East began to challenge the rulers of their respective countries. The Eisenhower Doctrine designed to buttress the latter did not make much headway. Another showdown between Nasser and the Western Powers was forced by the July Revolution in Iraq. American and British forces landed in Lebanon and Jordan respectively to protect the regimes against internal uprising. The foreign armies withdrew after some months. But that did not signify any victory for Nasser either. Lebanon returned to neutrality and normalcy. Revolutionary Iraq showed no enthusiasm for joining the United Arab Republic. The monarchies in Jordan and Saudi Arabia were as opposed as ever to Nasser's idea of Arab unity. Syria too was getting increasingly restive under the new union. St. John's study deals with events up to the middle of 1960 only. In September, 1961 when the Syrian Army disrupted the union, the anti-climax of Nasser's bid for uniting the Arab world under one flag reached its anti-climax. From then onward Nasser has been devoting all his efforts to build Egypt as a modern, welfare, socialist state which would serve as a model for the rest of the Arabs. From present indications this may not turn out to be a mere boast; and it is in this that the significance of the Egyptian Revolution lies.

The story of Nasser is well-organized and well-told. The author has collected the data through painstaking research and lengthy interviews and conversations with President Nasser and all those who had been associated with him from childhood onward, not excluding his foes. He is sympathetic to his subject; but he does not unduly spare him. He brings out the dictatorial character of Nasser's rule, his intense dislike of opposition of all kind and his harsh treatment of Egyptian Jews. But along with this Nasser has also brought immense relief to the peasant and self-respect and dignity, if not political freedom, to all Egyptians. And all this within the compass of less than a decade. He has often stumbled and fallen. But "when he stumbles he always falls forward; even when he falls he seems to land on all fours, like a cat".

M. S. A.

The Making of Burma by Dorothy Woodman (Cresset Press, London: 1962): 576 pages. Price 63sh.

It is sometimes a handicap for the little man to live in the shadow of a giant. For one thing the association of sheer size with an ancient civilization is likely to fix the attention of the onlooker on the interesting giant, while

his (onlooker's) vision is apt to get a little out of focus where the little man is concerned; for another, however picturesque the little man's personality may be, for the preceding reason, it is likely to suffer neglect. In this contingent world it is the size that matters.

The reasons for this comparative neglect belong partly to colonial history and partly to geography. Burma was added to the Empire later in time and when it was annexed it became only an appendage, a province of the Indian Empire. It also happens that Burma is situated at the head of the Bay of Bengal, away from the main trade routes, so that it was for long screened from areas where history was being made.

It is, therefore, not surprising that historical books on Burma are very few. While Burmese writers have dealt with specific aspects of their country's history, a comprehensive official history by a Burman is yet to be written. There are especially several unlit aspects like the sustained guerilla resistance to the British and the inner Counsels of the Court on the escalating foreign territorial absorption which have to be illuminated by the Burmans themselves from local records.

Meanwhile Dorothy Woodman has contributed a fascinating study of that country combining sympathy, sensibility and scholarship and based on original official documents.

The making of Burma covers a period of two centuries between the date when Ch'ang Ch'ien advised the Emperor of China to open up trade with the Western nations and 1960 when for the first time in history Burma and China delimited and demarcated the frontiers. With the signing of this agreement the story comes full circle.

The commercial interest of the East India Company saw Burma as a potential backdoor to the unlimited markets of China, while the imperial strategists regarded it as a buffer between the newly consolidated Indian Empire and China. In endeavouring to hold a balance between not alienating China by an outright annexation and not alarming the Indian Princes by the absorption of an independent native territory, diplomats in Whitehall constantly sought to exercise the growing British power to the exclusion from Burma of all Potential rivals.

Annexation was the logical last act of British colonial policy. As Dorothy Woodman puts it, "While King Mindon tolerantly practised co-existence with a foreign country already in occupation of the larger half of his territories, expansionists in Britain seriously considered annexation and commercial interests were its most fervent advocates. Thus annexation of Upper Burma in 1886 did not require the excuse of the unfriendliness of Theebaw, or the ruthlessness of his Queen, the unsatisfactory handling of teak contracts, or even the potential rivalry of French traders. These were important factors which influenced timing, but they were not the causes of annexation". Trade expansion, rivalry with France and a desire to safeguard the eastern frontiers of India, all played their part in the annexation. All these factors have been fully weighed and in the process much new evidence has been produced.

The most interesting chapter of the book is, of course, the one dealing with the nebulous northern frontier. That hoary, traditional, shifting frontier was at last finally fixed in 1960. This should be, and undoubtedly is, a matter

of great satisfaction to the ĩurmas. But since then history has inexorably swept forward. China is trying to heave forward in the south and it is so easy for her to exert pressure or exploit inner weaknesses in Burma when it suits her. How long will an expansionist China honour international obligations, contracts and treaties? This must be the question agitating the minds of all thinking Burmans today.

M.J.R.

BRITAIN AND CHINESE CENTRAL ASIA

The Road to Lhasa—1767 to 1905 by Alastair Lamb (Routledge and Kegan Paul, London, 1960.) 388 pages. Price 42sh.

This scholarly treatise by Dr. Lamb is the first of three volumes culled with painstaking diligence from material available in the British Foreign Office Archives—available only up to the period of 1908, other original sources, and supplanted with travel in the frontier regions up to 1958. Dr. Lamb is scrupulously fair in his treatment of the subject, although he points out quite clearly that the picture he has drawn is one sided—as seen by the British.

To the military reader, this is a fascinating book, the chief virtue of which is that it brings home with vigour, that the problems we face on our northern border are not as novel as we might believe them to be—neither in their political nor in their tactical implications. The author points out that the British felt that “when dealing with the primitive people of Central Asia, the problem often was not how to expand one’s power but how to prevent its indefinite expansion.” It is interesting also to note that the author quotes from an observation made as far back as 1814 that “a frontier . . . between two powerful nations holding each other in mutual contempt seems to point at anything but peace.” It is equally interesting to note with detachment and clarity afforded by hindsight, the ambiguity as well as the multiplicity of political aims of the one major military operation in this region during the period under consideration. As the author points out, the Younghusband Expedition of 1904 was considered variously by the Government of India as a means of re-establishment of British prestige in the region; and/or as a means to keep Russian influence out of Tibet, and thus away from the borders of India. In London, however, the expedition was at times viewed in the light of a “diplomatic weapon of some strength” to influence world opinion in the direction as Britain desired. The authorities of the Punjab and Bengal on the other hand viewed it as a favourable means of settling some of their long outstanding border disputes. It is also worth noting that the men on the spot too did not view the situation on the border in too dissimilar a manner from what they might look at to-day, with little concern with the effects of their exploits in the Capitals of Europe, or on the tea trade of China—all that they asked for was full support of their superiors. This, they often did not get in the measure that they demanded, because neither the Board of Directors of the East India Company, nor H.M.G., nor for that matter the Government of India were too keen to alienate China for what appeared from time to time as visions of profitable trade either in British goods for Tibetan gold, or “pashm” and high quality Tibetan wool, or Indian tea, or even to satisfy the scientific and anthropological curiosity of a generation of men. The “Great Game” of trying to keep Russian influence out of Central Asia and the machination of that famous politician-monk Dorjief, of the fascination found in the Secret Service have also been discussed, and look today much more in their correct perspective, than they did in the light of Kipling’s “Kim”.

The exploits of various travellers and missions in these inauspicious parts can hardly be recorded in detail in a book which deals mainly with policy, but it does appear fantastic that travel was not only contemplated, but there appears to have been a distinct stream of movement of persons and goods since the days of Warren Hastings between India and Tibet. Not only that, even from the middle of the nineteenth century, the effects of action, say in Ladhak, had a distinct impression upon what was happening further east, say north of Bhutan. The brief passage on the exploits of Zorawar Singh's army, its initial success in Western Tibet, later its defeat, and the subsequent Chinese siege of Leh, of the war-like activities of the Nepalese and Tibetans, of campaigns of Sikkim, and finally the Younghusband Expedition to Lhasa, are all pointers to the fact that military action is a possibility on this front. Similarly, Border Roads, the delimitation of frontiers on the "water-shed principle" even the removal of boundary pillars are not entirely novel phenomena of the nineteen-sixties.

The book under review is far from light reading, but it is a must for those who want to get into the correct historical perspective of a region which is in the limelight today.

A.M.S.

INDO-CHINA RELATIONS AND THE IDEOLOGICAL DEBATE*

- * 1. **UNITY AND CONTRADICTION**—Major Aspects of Sino-Soviet Relations, Edited by Kurt London, Frederick A. Prager, New York, 1962.
2. **THE SINO-SOVIET DISPUTE**—Documented and Analysed by G. F. Hundon and others, Published by the China Quarterly, London.
3. **NATIONAL BOURGEOISIE AND THE DEVELOPMENT OF STATE CAPITALISM** by N. Saveliev and R. A. Ulyanovsky, Peoples Publishing House, New Delhi.

The fact that the ideological debate between the Soviet Union and China has a bearing on India-China relations is generally ignored in this country although occasional reports in the Press have confirmed it. A news item emerging from Hamburg as late as 28th July, 1962, stated: "Eastern sources report that non-support by Russia in the Sino-Indian border dispute and the sale of Russian jet-fighters to India was taken as an open provocation by Peking." There are other indications also to this effect. The Indian Government has recently been reminded by the Chinese Government that the former had at no time fully accepted the Indian position on Kashmir, thus making it clear that the Chinese support to India in regard to this matter cannot be taken for granted just because the Soviets are giving it. There is, of course, no reason to believe that the Chinese are less unhappy than the Soviets over the U.S.-Pak military alliance, but it is no secret that there is no agreement between them on determining the nature and character of the present Indian society and government and it is the disagreement on this issue which leads to their taking different attitudes on Kashmir.

The three books under review, which throw much light on the ideological debate between the Soviet Union and China, are helpful in explaining its bearing on India-China relations also. The first entitled "Unity and Contradiction" is the result of the work of thirty-six scholars who have tried to examine the origins and trends of Chinese and Soviet policies and their aspects of unity and contradiction. The second is primarily a collection of

documents relating to Sino-Soviet dispute. It also contains three analytical studies made by three scholars in the field. The third is a pamphlet which reprints the writings of two Soviet scholars on the national bourgeoisie and the development of state capitalism in South and Southeast Asia. Its significance is that even a casual perusal will convince any reader that the analysis made there is a departure from original Russian and the present Chinese formations on the subject.

To take the first book. Being studies made from outside and not always by detached scholars, one must be cautious in accepting their conclusions. The Director of Studies at the Council on Foreign Relations writes in the Foreword: "In these studies no final answers are given, but together they provide many indispensable guidelines to serious thinking about the nature and the future of the Sino-Soviet alliance." The first section deals with the sociological aspects of the issue. Like those of other American writings on sociology the titles of the two essays included here may frighten the average reader; they are the "Political Modernization in Russia and China" and "the Embourgeoisement of the Soviet Union and the Proletarianization of Communist China". But in spite of the titles, if one persists in reading them, one realizes that they deal with such simple questions as the differences between the social and economic levels of Russia and China at the time of the success of their revolutions. This difference exists in a remarkable degree in the administrative systems inherited from the Communists in Russia and China. As the author on "Political Modernization" notes: "Several essential differences in the problems faced by the two countries may be suggested. When the Communists came to power in Russia, they inherited an administrative system that had provided stable and well-organized government for some two centuries. In China, by contrast, administrative controls had been in a state of turmoil for almost a century. Agriculture in Russia, if not very progressive in techniques, normally produced enough for the needs of the country in addition to a substantial surplus export. The aim of collectivization was to mobilize agricultural production and labour for the needs of industrialization. In China, the problem of creating an adequate system of agricultural production has yet to be solved. In Russia, the Communists inherited a substantial industrial plant on which they could build. In China, they had no such industrial base. In view of these differences, the system of organization and controls developed by the Communists in Russia could not be expected to meet the need of China. Unless the Russians were prepared to accept very significant differences in practice on the part of the Chinese, controversies and misunderstandings were bound to arise."

The importance of this analysis lies in the fact that it goes further than the usual one which attributes the differences between the present leaders of the Soviet Union and those of China to the fact that China is now undergoing a Stalinist phase of development which the Russians have outgrown. As the author of the present article suggests, the differences are much more complex than those arising from such a gap, which could have been narrowed down by a fast rate of development in China. What China is now facing is not just a Stalinist phase of development but some problems which were never faced by Russia at any time. And as such the stresses and strains in Chinese political life are also of a unique character and there was no guarantee that they would automatically subside by the passage of time.

What another writer refers to as the Embourgeoisement of the Soviet Union and the Proletarianization of Communist China have also their implica-

tions in their external relations. For the Chinese leaders, "the austerity of extreme proletarianism, the regimentation, improvisation, and reliance on organization and propaganda rather than on objective conditions must appear national features of the struggle for Communism. Their opposite numbers in Russia, in their overwhelming majority, are anything but revolutionaries, but are drawn from the pioneers of embourgeoisement in the U.S.S.R.—members of the new technical-managerial intelligentsia. ... The implications of all this for relations with the 'imperialists' seem fairly plain. The notion of achieving victory over capitalism in powerful economic competition, with the population of capitalist countries 'choosing' Communism when they realize what high living standards it opens up, is obviously very congenial to the present state of mind among Russians. In China, tension is needed to support the mythological world view which the regime requires to control its proletarianized population. China's relations with India do reflect China's need of tension.

The next section of the book deals with "Ideology and Organization". Like most other specialists, the authors of the article included in it display a lot of factual knowledge accompanied by an inability to enter into the spirit of the subject on which they are working. Very many interesting expressions like the "respective frustration levels" of Soviet Union and China are used to confuse the reader and conceal one's ignorance of the subject.

From the standpoint of the subject we are discussing the most important section of the book relates to "Sino-Soviet Policies Toward the Afro-Asian Countries." Although at present the Soviet Union's relations with a country like India are more cordial than China's relations with them, this was not always the case. As one of the authors notes: "Differences in practical policy toward Asia appeared during the Korean War. It soon became clear that independent Asian States were taking different attitude to the war than their former European masters or the American allies of the latter. This the Chinese recognized earlier than the Russians. Soviet policy, however, lagged behind Chinese even in the first years after Stalin's death, when the Moscow Government was more concerned with Europe than with Asia." But now the rule is reversed. The Soviet leaders have begun to ignore doctrines when they are seeing practical opportunities of cooperation between the national leaders and the business communities of the Asian countries on the one hand and themselves on the other. "If the Soviet Union emerges within a few years as one of the great trading powers of the world, and manipulates its prices according to political priorities rather than economic factors, it can have an enormous impact on the whole business communities of the new States." In such a situation, quoting Lenin's famous question; "who is using whom?", the Chinese Communists can assert that the national bourgeoisie in these countries are using the Soviet Communists and not "vice versa." This may strengthen their case that Russians are becoming revisionists and that they alone are the champions of sound theory.

The Soviets are not entirely blind to these prospects of attacks from the Chinese and other champions of sectarianism. They have already entered the battleground with their own theoretical weapons. In the article on "Some features of State Capitalism in India", which is included in the pamphlet on "National Bourgeoisie", R. A. Ulyanavsky observes: "The definite turn towards industrialization, the active efforts made to create the State sector, a certain limitation of the activities of foreign private capital in key branches of industry, intensification of State economic control over private capital, the

declaration of the national aim to build a so-called 'society along the socialist pattern'—all the above marked a change from the ineffective economic policy of the period." The author is of the opinion that "only a concrete historical analysis gives the possibility of correctly understanding the character of modern anti-imperialist State capitalism in some economically weakly-developed countries, and wherein it differs from imperialist State-monopolistic capitalism in the U.S.A. or in the countries of West Europe." The Chinese do not seem to have accepted this analysis and have shown no inclination to act on the basis that the national bourgeoisie and State capitalism are fulfilling some historically progressive functions in India.

The extracts of documents included in the book "The Sino-Soviet Dispute" are also helpful to the student of China's foreign policy, although some of the attempts to dramatise the ideological conflict by giving such titles as the "Chinese attack", "The Soviet Reply" and "Renewed Soviet attacks" are often misleading. A discriminating reader will also not fail to note that extracts are often chosen out of context to exaggerate the conflicts between the two communist giants.

Many of the conclusions reached by the editor in the "Introduction" are guesswork. But it will be interesting to a student of India-China relations. Referring to China's opposition to the Soviet Union's proposal to convene a Big Five meeting (of the U.S., the U.S.S.R., France, Britain and India) to discuss the Middle Eastern questions in 1958, the editor comments: "... the signs were that Peking objected no less to the inclusion of India instead of China to represent Asia in a Big Five summit conference. The Chinese stood firmly on their formal status as one of the five Great Powers recognized as such by permanent membership of the Security Council, and although in the circumstances of American non-recognition of Communist China they did not object to a Big Five meeting without China on European affairs, it was quite another matter to bring in India as a substitute for China in dealing with the affairs of Western Asia." He adds: "There was only one way for China to exert a compelling influence on Khrushchev, and that was by attacking him in his most vulnerable point—his standing as the supreme representative of the Marxist-Leninist cause . . . Communist China was further goaded into launching such an attack on the Soviet leadership by the distinctively unfriendly attitude of Moscow towards China's conflicts with two of her Asian neutralist neighbours—India and Indonesia." It was difficult for the Soviet Union to give up her friendly policy towards these countries without repudiating her new global policy of peaceful co-existence and peaceful competition. The objectives of the Soviet leaders was to disentangle India and other newly independent countries of Asia from the West and to lay down the foundations for their economic freedom and independence in defence matters by helping them to develop their own steel plants and advanced aircraft with technical aid from the Soviet Union. China sees two dangers in it; one, the strengthening of a capitalist state and economy and the other improving the technical skill of the armed forces of a government with which it had border disputes.

These aspects of India-China relations concerning the ideological debate between the Soviet Union and China have much more bearing for the future than the historical documents collected by the experts of the two governments concerning the McMahon Line and many agreements reached by the two governments.

SECRETARY'S NOTES

ADDRESSES

The difficulties of tracing addresses are now very much increased. Members are earnestly requested to keep the Secretary informed of changes in their addresses or if possible give a permanent address which will always find them e.g. a Bank.

LIBRARY

An extensive library is available for members of the Institution at Kashmir House in New Delhi. Members stationed outside New Delhi may receive books on application; they will be sent post free by registered parcel post, and must be returned within two months, or immediately on recall. No more than three volumes may be issued at any one time. Reference books and works marked "Confidential" may not be removed from Library.

A catalogue of books in the library may be obtained on payment of Rs. 6/- per copy, plus postage.

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The Institution has no spare copies of the Journal from Volumes 1 to 42, and is willing to buy a limited number at cost price.

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BALWADA, 2/Lieut. S. R., Artillery.
BARRY, Captain J. K.
BAWA, Captain A. S., E.M.E.
BHIMAYA, Captain K. M., The
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BHAGAT, Captain R. N., Artillery.
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DAS, Captain S. S.
DAVE, Captain A. S., Engineers.
DINA NATH, Major, E.M.E.
DUBEY, Major K. L., Engineers.
DUTTA, Captain K. C., Artillery.
GILL, Major R. S., Engineers (Life).
GOEL, Captain J. N., The Parachute
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GUPTA, Major J. P., Engineers.
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VASISHT, Major, R. D., Artillery.

VENKATESWARAN, SHRI, A. P.
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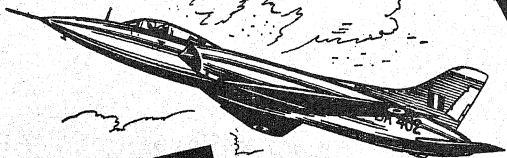
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EDITORIAL

ON DEFENDING THE HIMALAYAS

Though the enemy has unilaterally declared a cease-fire and withdrawn in the N.E.F.A., the threat posed to our security has by no means diminished. We are not unaware of the massive military build-up near our borders and the government has warned China that India is bound to defend the Himalayan kingdoms against aggression and has protested against the menacing attitude it has shown by massing troops near Bhutan and Sikkim and reportedly taking steps to create puppet governments for them.

The fighting in the N.E.F.A. last year has focussed attention on a number of inadequacies which hampered our troops in their defensive task. The enemy was able to bring to bear on our positions a superiority of numbers and fire-power. It is also obvious that he had better intelligence, greater mobility and logistical flexibility. We have to consider ways and means to deprive the enemy of superiority in these departments. Therefore a topical significance attaches to the articles analyzing Chinese Himalayan policy and making a case for a Himalayan frontier force, which were printed in this journal last Spring and Summer. Taking into consideration the terrain, conditions of operation and other difficulties confronting regular forces in the defence of our northern frontiers, the author had pleaded for a resurgence of the frontier spirit in our armed forces. He had advocated the creation of an irregular force organized on the lines of Scouts and Guides with reinforcements of the Frontier Force (Piffer) type of units. The task of the force was suggested as manning the first line of defence and carrying out the duties of covering troops. In addition to their economy during peace-time, the author had pointed out, such a force will permit the successful handling of regular forces in mass to deal with an enemy that has already been outmanoeuvred, outwitted, harassed, deceived and surprised by lighter

skirmishers in the form of the Himalayan Frontier Force with its corps of frontier guards.

No doubt the idea of constituting a frontier force, built up carefully, in small, controlled steps from the tribal or local level upwards under the guidance of hand-picked officers, comprises an attractive solution of our problem. Such a force will, on the one hand, deprive the enemy of superior mobility and logistical flexibility, weaken his intelligence and strengthen ours; on the other hand, it will compare well with the regular forces for the same task in terms of financial outlay and provision of stores.

However, it may well be argued that the Scouts and Guides which form core of the author's idea of a frontier force will take too long to be raised and trained in the large numbers required for deployment on the long frontier. The force of events since the writing of these articles has vitiated the time-factor and we can perhaps no longer afford the luxury of letting our defences grow at an optimum pace. Another idea would lay stress on mass mobilisation, rather than on the drafting of exceptionally gifted key personnel, to constitute a militia force. Such a militia would form a fencing in depth, its men trained in the art of warfare and sound of ideology, its tasks during the truce-time designed not only to meet enemy probing, infiltration, subversion and propaganda, but also to ensure active support and allegiance of the local population at all times. Unorthodox and versatile, the militia would include several non-combatant types with specialised functions who would gear it to fight the battle of the human mind. A logical extension of the idea would lead us to the form of defensive settlements, with all their adult population forming part of a defensive militia, which were successfully developed by the Jews in Palestine; whether it is desirable and feasible to work out such elaborate and long-term defence at the present juncture is open to doubt.

Whatever the form and shape of the defence force to guard the Himalayas, it is obvious that a new type of frontier force has to be evolved which will free our regular forces from static guard and patrol duties which appear to extend them so unduly at present, since the alternative is to augment our regular army to such an extent that the economy of the nation will be crippled, which is one of the aims of the enemy.

The author has laid careful stress on the difficulties that must be overcome. The unorthodox officer gets short shrift in peace-time and unless there are compelling reasons for raising irregular forces, they will not be raised. There is, normally, a considerable inertia and prejudice which discourages heterodoxy. The foremost difficulty is

the paucity of the right type of officer corps. One way of meeting this problem would be to call upon younger officers to opt for service in the Himalayas, offer them incentives like special pay and other privileges, provide them with specialised training to equip them for the job. The officers opting for this service should spend the remaining part of their service in the Himalayas, and their training must be broadbased to meet the special requirements of building and commanding the irregular frontier force. There might indeed be provision for giving opportunities to senior officers of the frontier force for promotion as political officers in the frontier regions, and, on the other side, greater opportunities for the rank and file of the irregular forces for promotion to the officer ranks.

Equally important factor is the choice of weapons and equipment. The conventional arms are not designed for war in the rugged, thickly forested or snow-covered heights of the Himalayas. Whatever weapons are selected or designed for such force must be light to handle, quick to operate, and simple to repair. The same criteria apply to other essential equipment. The tasks which require heavy and complex military hardware would be left to the regular forces. Finally, there is the problem of training which has special features that make the task easier on some ways and more complicated in other ways. The personnel, recruited largely from among the locals, would already be familiar with the terrain and capable of operating at the high altitudes without much special acclimatisation. They would also be familiar with the local dialects, flora and fauna. On the other side, the training must prepare them for struggle with a wily and determined enemy who is adept at subversion and propaganda, deceit and deception.

Thus, no matter what shape and form may be found suitable for the frontier force, the problem of providing the right officer, the proper weapon and the best training will have to be tackled successfully. With these problems solved quickly and realistically, we must set about building a defence system which will provide a foolproof safeguard and comprise an effective deterrent for the enemy while enabling the national resources to be devoted to the development of the national economy.

THE PROBLEM OF RADIOACTIVE FALLOUT

By Lieutenant-General B. M. RAO (Retd.)

TOWARDS the end of 1962, the United States carried out a test series of nuclear bomb explosions in the Pacific, lasting over a period of eleven weeks. The series included explosions involving high-air bursts, low-air bursts, under-water and at high altitudes. They were of low, medium and high yields.

Protests against these explosions were made by all the leading statesmen of the World. There were international conferences in New Delhi, Accra and Moscow, where lots of eminent and not so eminent people made long speeches and passed high-sounding resolutions. There were strikes, protest marches, demonstrations and mass appeals in various capitals of the world. If mere words and resolutions had any effect, they would have been sufficient to stop the tests.

Meanwhile, the Disarmament and Nuclear test-ban conferences are dragging along in Geneva ever so slowly, that one is left wondering if they will be able to achieve anything worthwhile in our life-times.

It is, therefore, appropriate that one sits down and views the situation calmly and dispassionately without taking sides. The situation calls for an exact definition of the immediate problem, its extent and how far it can be remedied.

Nuclear explosions have immediate and delayed effects. The immediate effects are intense light flash, heat, blast and radiation. As every one knows the light is severe enough to cause retinal burns and blindness. The heat which may be due to heat flash or secondary fires cause the most severe damage and casualties. The blast effect is devastating. But all these occur only in the vicinity of the explosion and, therefore, are of little consequence to the future of the world as a whole.

The world-wide protest is not against these, but against the radiations given out during the explosion. Here, again, the quantity is such as to affect only the neighbourhood, as, for example, the case of the Japanese fishing vessel, 'Lucky Dragon' which was about 80 miles away from the Hydrogen Bomb test in 1954. Of the crew of 23, all were affected, some severely, but only one died, while some of them are still suffering from the effects. Even so, the danger cannot be considered as of world-wide significance to call for such indignant protests from the four corners of the globe. We can, therefore, dismiss the immediate effects of nuclear explosions as of local significance only, though the amount of damage caused may be terrific and comparable only to earthquakes or volcanic eruptions.

The delayed effects of nuclear explosions are made up of the fallout of radioactive substances created during the explosion. Such substances may fall to earth immediately, be carried by the wind over long distances or escape into higher space only to come down many months or years later.

In the great majority of cases, the half-life of these radioactive substances is very short so that they become innocuous quickly and therefore, cease to

have dangerous consequences. In a few isotopes, however, whose half-lives extend over many years, there is danger of their fallout invading the tissues of the human body and causing damage. Such isotopes are those of Strontium, Cesium and Carbon. Of these, the radioactive isotope of Strontium is particularly dangerous, as it is a bone-seeker and, once deposited, continues to give off emanations harmful to the body for many years.

Thus, all this world-wide fuss and bother about nuclear bomb explosions amounts to this: these bomb explosions will increase the amount of radioactive Strontium on the surface of the earth. It is pertinent to inquire in this connection as to the amount of radioactivity already present and if so, how much, and what its harmful effects on man are.

RADIOACTIVE EMANATIONS

Radioactivity refers to the emanation of energy in the form of alpha and beta particles and gamma rays. Alpha particles are the nuclei of helium atoms. They bear a positive charge and have little penetrating power; therefore they are not of much harmful consequence in the context.

Beta particles are negatively charged electrons which have a greater penetrating power than the alpha particles; these are the ones chiefly responsible for damage to the human tissues. The gamma rays are similar to X-rays and can penetrate matter easily; therefore, they are dangerous. The radioactive strontium and carbon emit mainly beta particles, whereas the radioactive cesium emits the gamma rays.

The tissue damage is entirely due to the action of the radioactive emanations on cells which make up all tissues. This action may be of varying degrees depending upon the dosage. If large, it may actually destroy the protoplasm of the cell by denaturation of the proteins or destruction of the enzymes. Smaller doses may affect the nuclei of cells by breaking the chromosomes. During the vegetative phase, the nucleus has small particles called chromatin, distributed evenly throughout its substance. At the time of multiplication, however, these chromatin granules join together to form a skein, which divides into chromosomes, whose number is fixed for that species. These chromosomes are made up of an infinite number of genes. Each gene is responsible for one particular characteristic of the species, and if destroyed, that particular characteristic will fail to make its appearance in the new cell. Thus the colour of one's eyes, the length of one's nose, the shape of the mouth, and each and every characteristic which distinguishes one individual from another or one species from another depends on this all important gene. Radioactivity may, if strong, break the chromosomes containing the genes, resulting in malformations; or, if in smaller doses, may mutate the genes. This mutation is important to understand.

Mutation means an alteration in one or more genes, by which the particular characteristic for which the genes are responsible, may change. It may be a change for the better or it may be for worse. In stud farms, by selecting the animals for breeding, which have different genes from others, it is possible to improve the quality of the animals. The entire race-horse breeding industry depends on this principle. In agriculture also, by proper selection of the strains, it is possible to develop improved strains resistant to rust, draught, disease and poor soil.

Unfortunately, as far as present knowledge goes, the effect of radioactivity has been uniformly to cause deterioration in the species. In other words, it invariably has a harmful effect on future generations. Why it should be so is not clear. If it is possible to improve the strains of seeds as those of grass and wheat by the use of radioactivity, it stands to reason that radioactivity may also affect a change for the better in the strain of *Homo sapiens*, though this change for the better may come about after an enormous amount of inferior strains have already taken the field.

The biological effects of radioactivity on man may be briefly described under two headings:—

(A) *Effect on the Individual :*

This results in increased liability to leukaemia, cancer, cataract, premature ageing and shortened life-span. So far, these are still in the region of conjecture and analogy, because it is not possible to conduct experiments of this nature on human beings. Perhaps if there was some region on earth, where radio-activity is already high and which is inhabited by people, it may be possible to observe whether there is any increased tendency among such people to these conditions. The only part of the world where a high level of radioactivity is in the monazite sand region of Kerala, and some other parts of the world. In Kerala however, the radioactivity consists mostly of gamma rays and is poor in beta-particles emission. Thus, experimental observation under natural conditions is not feasible.

The World Health Organisation, International Atomic Energy Agency and the Indian Atomic Energy Establishment have all carried out extensive investigations, all the same, into the existence of these conditions among the people inhabiting the monazite sand region of Kerala. They have not been able to produce any conducive evidence so far that the natural radioactivity occurring in Kerala has had any effect on the health of the inhabitants.

(B) *Effect on future generations:*

This is perhaps the chief problem confronting man today. The action of radioactivity in inducing mutations in germ cells has already been described and also how these mutations are mostly of a deleterious nature, harmful to man. Already scientists in different parts of the world have uttered warnings that increase in radioactivity would mean handing over the earth to viruses and insects which are somehow strongly resistant to radioactivity.

THE ULTIMATE SOURCE OF LIFE

In this connection, it is worthwhile noting that radioactivity on the surface of the earth is not something new, introduced only after the atom bomb explosions over Hiroshima and Nagasaki. Radioactivity is a form of energy which has been in existence even since the earth began and long before it too. After all, when we realise that the sun's energy is due to these very explosions taking place incessantly, we appreciate that radioactivity is the ultimate source of life in the universe. The background radiation, as it is called, is therefore, co-existent with life. In addition to the natural radioactivity occurring on the earth's surface, as from igneous rocks and minerals, we are also subjected to cosmic rays from the outer space. It can be shown by instruments that the human bones do contain a small amount of radioactive substances. This applies to the oldest skeleton occurring on earth as much as to present-day skeletons.

Therefore, what we fear from radioactive fallout is that this naturally occurring background radiation will increase and, so, constitute a danger. Scientists have laid down minimum levels of such radioactivity and have said that when these levels are exceeded, the slow process of extinction of man on earth will commence, without any possibility of reversal. In drawing such

a pessimistic conclusion, the scientists have, however, ignored two important factors, namely, man's ability to evolve a radioactivity resistant breed and his intelligence to neutralise or eliminate radioactivity in his body.

So far, the scientists have carried out their experiments in laboratories, on insects and other living organisms using massive doses. But man is not likely to be exposed to massive doses except in the vicinity of the explosions. Whether gradual increase in radioactivity in infinitesimal doses can help man to survive has still to be determined. If we take the insect world as an example, we see that they develop natural resistance to insecticides when exposed to them in gradually increasing doses. Knowing that man has survived various calamities during the past ages, it is not too much to expect that man will develop natural resistance to radioactivity, provided the increase is very, very gradual.

Experiments are in progress in most countries to discover an antidote for radioactivity. Already Japan has claimed good results with certain drugs. It is not in the region of speculation to claim that some antidote may be evolved in future. As strontium and carbon, in their radioactive forms, are the chief agents in this problem, it may be possible to eliminate these incriminating substances from food and water, by such methods perhaps as the ion-exchange process. This method has been used with advantage in industry in preparing water of the required degree of purity. It may be an expensive method, but it is surely feasible to adopt it on a universal scale, when the alternative is human extinction. I feel, therefore, that all these public protests are more the result of propaganda based on insufficient data and much more experimental work remains to be done before any verdict on the hazards of radioactivity can be finally considered.

There is, however, one disquieting feature about the recent U.S. test over the Christmas Island; and that is their attempt to explode a nuclear bomb into the Van Allen Belts. This time they succeeded in blowing up a small portion of the lower Van Allen Belt, but if they succeed in making appreciable dents in both belts with more powerful nuclear bombs, the consequence may be, a sudden sharp increase in the radioactivity on earth, which may have all the consequences that the anti-bomb demonstrators visualise. So far, it has caused only minor interruptions in radio-communications. Whether the radioactive particles thus thrown into commotion will settle on earth or continue in their orbits round the earth, remains to be seen.

SOVIET AIRBORNE

by Captain WILLIAM J. LIELL

THE Soviet Union was the first nation to cultivate in the civilian population an interest in parachuting. In the early 1930's scores of brightly coloured jumping towers dotted the countryside. Many of the villages proudly displayed their "coat of arms" on their tower. Men, women and even children participated in sport parachuting, and competed for the many prizes awarded by the Government. Whole families were "parachute qualified."

Russia became interested in the tactical possibilities of parachute troops quite a few years before the outbreak of World War II. The Soviets early pioneered airborne techniques and operations. She was also the first nation to develop and test vertical envelopment principles. On August 18th in 1933 sixty-two Air Force soldiers parachuted from three bombers during an experimental training mission. As early as 1935 an Infantry Division was air transported from Moscow to Vladivostok, a seaport on the Sea of Japan. This was an unheard of distance of over four thousand miles!

Again a pioneer in airborne development, the Soviets startled the world in September 1935. The shock came when the Red Army was conducting manoeuvres near Kiev. Thousands of troops were both parachuted and air/landed at specific locations in a matter of minutes.

Before the exercises it was decided to capture an area thirteen miles behind the enemy's front lines. After fighter aircraft secured the air over the objective, thirty transports dropped six hundred parachutists from an altitude of 2,300 feet. As soon as these men landed, a second wave of aircraft appeared and disgorged another six hundred paratroopers. This group was to provide ground support for the first. When the paratroopers had secured the ground, waves of airplanes appeared carrying the main body.

These planes, the four-engined TB-3, landed and unloaded their troops. They then quickly took off, leaving the area clear for following planes to land. The entire force numbered approximately six thousand soldiers. Supported by fighter-bomber aircraft, the paratroopers quickly set off on their assigned tasks. Objectives were seized on schedule and the manoeuvres were brought to a close ahead of schedule.

IN WORLD WAR II

The earliest known combat operation of the Russian para-troopers occurred in Rumania in 1939. Two battalions of men jumped with the mission of seizing key bridges and road junctions in Bessarabia to pave the way for advancing ground forces. The attackers took the defending Rumanians by complete surprise and the objectives fell quickly. This operation was a glowing success. After Bessarabia however, the Airborne Corps was plagued with failure after failure.

In November of the same year, during the airborne attack on the Mannerheim line, three Brigades consisting of thousands of men dropped from aircraft. Some without parachutes, jumped from low altitudes into snow banks. Casualties ran into the thousands. The very few who survived the jump were quickly disposed of by the Finns.

Failures again plagued the Airborne planners during the operations at Pechenga, a city on the Arctic Ocean. Due to a faulty intelligence system of the Russians or a brilliant network of the Finns, defending soldiers were on the ground awaiting the next parachute drop. It came off on December 2, 1939. As the Russian parachutists landed they were quickly killed or routed by Finnish ski soldiers. Needless to say, this drop was an unparalleled failure.

Another small raid on February 6, 1940, was destined to be unsuccessful. A group of parachutists dropped behind enemy lines to destroy a bridge. They were seen by a woodcutter who was returning from a day in the forest. He reported them to a small garrison that was stationed in his village. Within the hour radio signals alerted ski patrols throughout the region and by the following dawn, the raiders were tracked down and captured.

Toward the close of 1942, Lady Luck at last beamed at the Russian Airborne. In September, enemy troop units had surrounded the city of Odessa in Rumania. On the 22nd, parachutists from the Navy's Black Sea Fleet jumped behind the enemy. They destroyed a high-level Headquarters, and killed or captured many of the enemy. This jump aided considerably the relief of Odessa.

During World War II, the Army frequently dropped Airborne units to assist guerillas that were harrassing the Germans. Two such drops occurred in the early months of 1942. In January, the IV Airborne Corps jumped near Vyazama, northeast of Molemsk. Eight days later, the III and X Airborne Corps also dropped. Later in September, Feodosiya, on the southeast coast of the Crimean peninsula also saw parachutists drop to support guerilla activities.

A major change of command structure came in February 1942. The airborne Arm was transferred from the Air Force. It now became a separate branch of the Armed Forces, responsible only to the Commissariat of Defence. To support the ground elements engaged in the battle of Stalingrad, parachutists captured an airport at Maykop in the Ukranian Soviet Socialist Republic.

During the latter part of 1943, the tide of battle changed in favour of the Soviets. The Red Army was hot on the heels of the retreating Germans. On the evening of September 24/25, 1943, the V Airborne Corps dropped near Cherkassy, a town about 125 miles southeast of Maykop. They were met on the drop zone by partisans who hid them in the woods. They joined the guerillas in conducting raids against German supply routes and lines of communications. On November 13, the paratroopers led the attack on Cherkassy by jumping from aircraft that had landed during the previous days. They were then joined in a classic ground linkup and the airborne phase of the operation ended.

ORGANIZATION

During World War II, the Soviet Airborne was reorganized several times. The last change found approximately 3,500 men in a Brigade. The Brigade was composed of, basically, four parachute Infantry battalions. For support there was organic signal troops, engineers, anti-aircraft and anti-tank artillery. Each battalion had three rifle companies of about 115 men each. The A-7

and the G-11 gliders each with a capacity of 2,000 pounds were available though rarely put to use.

The paratroopers were transported in the TB-3 and the PS-84. Both of these transports had a capacity of twenty to twenty-five parachutists. During the latter part of the war, the IL-4 was also used as a troop transport. The lack of transport planes was the greatest administrative deterrent to large-scale airborne operations that the Russians had to cope with. Because of a decision to concentrate the efforts of the aircraft industry on bombers rather than troop-carrier aircraft, Russian airborne units were never employed on a grand scale.

The post-World War II Airborne Corps is still maintained as a special branch of the Armed Forces. It consists of parachute and air/landed elements, and has its own organic Air Transport Division. Paratroopers wear a specially padded khaki coverall over the regular field uniform. A pair of black boots and a brown leather helmet complete the jump uniform. The pilots of this Division are also qualified parachutists. The Airborne Corps conducts numerous parachute schools throughout the country.

There have been estimates of from 100,000 to 150,000 parachutists in the Soviet Armed Forces. Quasi-military parachuting clubs and organizations still, as in the 1930's attract many thousands of young people to the challenge of sport parachuting. In the event of hostilities, thousands of trained parachutists exist, ready to don the uniform of the military paratrooper.

General Kurt Student (the German World War II Airborne Commander who planned and lead the Airborne invasions of the Low Countries and Crete) very recently estimated that the Russians have ten Divisions of Airborne troops. The many disappointments of World War II Airborne experiences have called for improvement in all aspects of parachuting techniques. And they have been made!

TRAINING AND EQUIPMENT

A parachute jump is never conducted just for the sake of making a jump. There is always some type of tactical problem integrated with the dropping of paratroopers. Attack and gaining the momentum of the attack is habitually stressed. Speed and initiative are continually emphasised to the individual soldier. Reaction soon becomes automatic. Heroic achievements of past combat paratroopers are continually publicized within the airborne units. Young men are taught to emulate these heroes.

Physical training is stressed at all levels of command and in all facets of daily military life. Daily runs are natural occurrences. Wrestling, boxing and judo are taught to all paratroopers, while perseverance and endurance are developed with painstaking training. Because of the probability of being isolated on the battle field the paratrooper is taught to rely on his own initiative and ability. Problems are presented during training that are designed to force him to make his own decisions.

In the field of Aviation, fixed-wing aircraft for small utility and reconnaissance missions are now organic to the Airborne Division. Additionally,

both light and medium helicopters have been placed under control of Airborne Commanders. A twin-engined aircraft, the Camp, can be loaded from a ramp in the tail section and can carry upwards of sixty soldiers. The Cub, a fixed wing, four-engined airplane also using a rear loading ramp has a capacity of ninety-two men.

Small, light, versatile helicopters are used as reconnaissance vehicles, and as platforms for target acquisition and artillery forward observers. A new transport helicopter, the Horse, can carry forty-two soldiers or loads well over four and a half tons! Training of fighter-bomber pilots in the ground support role has also been greatly improved.

Techniques of conducting parachute operations have been vastly sophisticated. The selected drop zones and landing areas are attacked with rockets and bombs by cannon firing fighter-bombers just prior to the arrival of the troop carrying transports. During the operation, additional high performance aircraft provide cover for the attackers while long-range combat planes isolate the area from enemy interference. After the parachutists have landed, all-weather air support is available for the duration of the ground action.

Nuclear training for parachute units is stressed at all levels of command. Squad and platoon-size groups of soldiers are being trained to locate, identify and destroy enemy nuclear weapons positions. Attention is also focused on the enemy's means of transportation of nuclear devices and delivery systems. Other missions include dropping into an area that has just been attacked with nuclear weapons and exploiting the possibilities of future development. Field expedient means of survival on the atomic battlefield are also taught to the individual soldier.

The age-old affection of the Russians for artillery is as evident as ever. Tremendous strides have been made in lighter artillery having greater range and accuracy. A new 240 mm mortar now has a range of 10,000 yards. A 203 mm gun-howitzer has a maximum range of 32,000 yards. Smaller, lighter, longer ranged radios and other items of signal communications equipment are now available to the Soviet parachutists. Experiments are always in progress to design telephonic devices that are simple enough for the ordinary soldier to operate and maintain under field or combat conditions.

Tactics have been studied and revised to depict airborne troops being used against enemy flanks and rear areas. Enormous emphasis has been placed on night operations and that immensely significant principle of war—surprise. Seizing or neutralizing bridges, railroad junctions and mountain routes is always integrated into field problems. The planned assault includes air landed troops as well as paratroopers. Helicopters or assault-aircraft carrying light, mobile assault type weapons are used in lightning moves to seize objectives or bypass isolated groups or other less strategic objectives.

Needless to say, the Soviet Airborne has made tremendous strides since World War II. The old practice of depending on captured enemy weapons and equipment is at last gone forever. Medical evacuation, helicopter resupply and air portable atomic devices and weapons are areas that are constantly under study. Support for the Corps is still not what the regular Army Corps has in the way of heavy equipment, armor and artillery. Research and civilian industry however, have teamed with the military to combat and overcome these problems.

In any future conflict the Soviet Airborne certainly will constitute a force that will not easily be reckoned with.

Russia

World War II Airborne Brigade



four parachute battalions of about 700 to 750 men, each, each had three rifle companies, an anti-tank company, a mortar battery and a machine gun company. The technical services were also represented.



engineer company of 80 men.



signal unit of 60 men.



anti-tank unit of 200 men.



anti-aircraft company of 75 men.



reconnaissance detachment of 65 men.

SOME HUMAN PROBLEMS OF HIGH ALTITUDE

By Major S. P. ANAND, ENGINEERS

INTRODUCTION

WITH the heightened attention now being paid to the remote, higher regions of the Himalayas, the Army is becoming increasingly aware of the inherent problems of operating at very high altitudes. The problems are many, and diverse in their nature; and not all of them have been solved perfectly. Experts and also others are, however, engaged in collecting new data on all aspects of living, working and fighting at these heights in an effort to reduce the hitherto formidable problems to their proper size.

Some of these problems relate to the suitability of various types of equipment at different altitudes, the fall in their efficiency as they are employed higher and higher, and the need for finding methods to decrease the rate of fall of efficiency and finally to eliminate it altogether. In this paper, only a few of the human problems which may confront a leader in very high altitudes are discussed.

The variety of human problems at very high altitudes arise from three fundamental attributes: the altitude, the cold and the inaccessibility or lack of communications. It is a soldier's capacity to adjust to the problems resulting from these attributes which determines his will to stay with the job and thus affect his morale. The leaders in these areas must learn to interpret the influence of the fundamentals on the conduct of their men and help them in adjusting to the environment. Since it may not always be possible to provide the soldier with the usual incentives in shape of physical comforts, the leaders must be able to offer to their men such incentives as satisfy something beyond their animal needs and fortify their determination to keep on fighting. This is clearly the leaders' job; they must tackle it with good planning, provide instructive guidance and set personal example for their men to emulate. Given leaders fully conversant with the problems, most of the difficulties can be forestalled and the right spirit induced among the men.

The three main attributes which are responsible to most of the difficulties in these areas, along with connected problems, are discussed individually in the succeeding paragraphs and a few solutions are suggested. It must, however, be kept in mind that these factors are closely inter-linked and the human problems they cause are a result of their combined influence. It is also pointed out that the observations made here are based on purely personal experience and are not official in any manner whatsoever.

ALTITUDE

Under this heading we will consider the effects that occur at altitudes of 14,000 feet and above.

The plainmen in general become irritable and short-tempered at these heights. They are prone to lose temper over trivial and minor issues. Un-

usual but harmless habits or foibles of others become a source of irritation and at times may lead to blows. Compatibility, normally taken for granted in the Services, becomes a big problem at high altitude. The purely physical difficulties of subsisting in a rarefied atmosphere are aggravated by several connected circumstances to result in such an emotional state. Some of these factors are considered below:

- (a) *Constant struggle against nature together with lack of confidence in oneself to carry on the struggle*: This situation is best met by inculcating the desire for adventure, new experience and initiative among men. They must be made to understand that they are doing something special of which they can rigidly be proud.
- (b) *Loneliness due to lack of change in company*: The feeling of monotony is obviously linked to an excess of spare time. When men start feeling bored, their attention flags, their desire to get the work done is depleted, and their morale also suffers. Provision of variety in the routine of work is a good remedy, but where that is not possible, the best thing is to keep the men busy, even if it is the same work day after day. 'The best morale is found in busy soldiers'.
- (c) *Lack of normal luxuries*: The leaders should endeavour to induce in men the spirit and determination to keep on fighting at all costs, the desire for adventure and new experiences. The remedial steps suggested in para (a) above may help.
- (d) *Problem of confidence in leadership*: To remedy this state of mind, the choice of leaders is very important. It should be ensured that the leaders are tough, both physically and mentally, and are capable of setting personal examples in all matters. The leaders must make themselves fully conversant with the area, its resources and other related aspects.
- (e) *Mental unpreparedness to face the multitude of problems which cold and altitude may present*: To remedy this state of mind and to prepare the men to face these problems rationally, it is imperative that they are fully briefed on the subject before they are induced. This training will not only induce confidence in them but will also remove the often hazy and discouraging ideas they are likely to pick up—thus fully preparing them to face the problems and, where necessary, observe the required precautions.

Most of the problems discussed above and resulting from high altitude can be minimised by providing for a period of gradual acclimatisation at a selected altitude, say about 10,000 feet above the mean sea level, at which all members of the party are able to eat and sleep well without any acclimatisation.

COLD

Under this heading, the effects produced by cold of magnitude minus 20°C. and below, and remedies thereof, are considered. In general, continuous exposure to cold produces mental distress, indifference to work, lethargy and eventual loss of morale. This mental state is caused by the fear of falling ill due to intense cold. The normal diseases are pneumonia or bronchitis, frost bite, tonsillitis, cough and cold. Of these pneumonia and frost bite are the two

main diseases. The usual precautions against these two are discussed below :—

Pneumonia

Pneumonia is due to sudden exposure to cold and may be caused as a result of :—

- (a) negligence on the part of the patient: This can be remedied by ensuring that all the members at all times are properly clothed. Too much clothing does not kill a man—too little clothing may! And
- (b) confidence and warmth gained after drinking rum, and sudden exposure to cold thereafter without sufficient clothing.

Frost bite

The parts of the body most vulnerable to frost bite are the fingers, the toes and exposed portion of the face. Some of the causes of frost bite are as follows :—

- (a) *Insufficient protection provided by clothing*: The only remedy against this, seems to be the provision of suitable clothing.
- (b) *Lack of motion in fingers and toes*: This is perhaps the most common cause of the frost bite—particularly so in areas where travelling is mostly done on ponies. During long stretches of riding, the feet become very cold and are thus frost bitten. The best remedy against this is to warn men to invariably resort to walking in between long stretches of riding. Even while riding, the men should be warned to keep moving their fingers and toes as much as possible.
- (c) *Sudden contact with a cold metallic article*: This is another fairly common cause of frost bite. Men should be warned not to keep any metallic article in the open and within easy reach at night, otherwise sudden touch at night may cause frost bite.
- (d) *Crystallisation of sweat*: During long stretches of march, the feet start sweating and this sweat crystallises during the rest period, thereby bringing the temperature down and causing frost bite. The only remedial measure against this seems to be to warn the men to curtail the rest period thus retarding crystallisation.
- (e) *Lack of knowledge about symptoms of frost bite*: One of the members of an expedition, which went out during winter, who had frost bite, never reported it for three days thinking that it was a mere abrasion caused by tight boots. He reported only when his foot started aching badly and it was then that he was discovered to be a case of frost bite. It is, therefore, very important that the men are fully explained the symptoms of frost bite and warned to report to the doctor whenever in doubt.

A frost-bitten hand, foot or nose should be thawed out slowly. The best thing to do is to cover it with clothing and to let the body do the warming, or it may be put underneath clothing in contact with a warm spot of the body. It can safely be wrapped in clothes and soaked in cool water, but it must not be exposed to hot stove or bukhari nor should the part be rubbed with snow.

LACK OF COMMUNICATIONS

The most serious effects that the lack of communications produce in a

man's mental set up in these areas are the uncertainty of specialist medical aid and the family worries. Both these problems and the suggested remedial measures are discussed below:—

Specialist medical aid: The mere presence of the RMO is not sufficient. What is required is the rendering of specialist medical aid particularly during long stretches of adverse weather when flights are interrupted and evacuation of casualties is, therefore, delayed. During the winter when the weather goes bad for weeks together at a time, it is essential that the arrangements are made to give specialist cover at the outposts in order to counteract the feeling of uncertainty. Since it is obviously not possible to provide such cover at all the outposts, it is suggested that the following method be adopted till such time that all-weather flying becomes feasible in these areas:—

- (a) Well-equipped, pressurised modern hospitals with necessary specialist facilities be established at two or three key locations, and
- (b) special helicopters be provided at key outposts for the evacuation of casualties. It is easier for helicopters to evacuate casualties to hospitals within these areas rather than to carry them to plains. The percentage of chances of recovery is greatly increased in view of the fact that the location of these helicopters at the key outposts will not entail their flying over high ranges or passes and thus reduce greatly the effects of bad weather. Needless to say that those helicopter units should be placed directly under command of the local command.

Family or personal worries: These comprise a very tricky problem on which a leader can help his men out only within certain limitations. Mostly, the problem can be sorted out to a certain extent by merely sending the individual on leave. But even this may not always be possible due to uncertain communications. There are two other alternatives open to the leader—to write to DSSA Board or to contact the Civil authorities to help his men. The civil authorities can do a lot to help individuals in the outposts. It is, therefore, obvious that the best remedy lies in the government issuing a firm policy on the subject and impressing on the local authorities the necessity of going out of their way to help such individuals. During the past few months a large number of individuals and private bodies have come forward with offers of various kinds of help for the families and other domestic problems of the jawans. These facilities should best be coordinated under the auspices of the local authorities of the government.

SUMMING UP

From the foregoing, it can be seen that none of the high-altitude problems enumerated above is insoluble. Good planning and instructive guidance, coupled with personal example set by leaders, who themselves should be fully conversant with these problems, can obviate most of these difficulties. But if these problems are ignored and no suitable answer is found for them, the result may be disastrous. It is, therefore, incumbent on all leaders to learn to interpret the influence of these problems on the conduct of their men—and to find suitable answers. They must know the relationship of all these factors to moral and learn how to build up morale at high altitudes thereby increasing the capacity of their ment to stay on with the job—especially on a long, hard job—with determination and zest.

REORGANISATION OF AN INFANTRY DIVISION

By Major M. L. TULI

INTRODUCTION

THE standard Infantry division is the basic fighting formation of the Army. It contains in its organisation, balanced elements of all arms and services. Its organisation is the result of experience gained in two world wars and is primarily designed to meet the requirements of fighting in European theatres. (The concepts with regard to both organisation and tactics of North Atlantic Treaty Organisation powers are changing rapidly since the introduction of Nuclear weapons).

In war, commitments of ground forces are varied and formations have to operate in different theatres and under different circumstances. The organisation, equipment, training and tactics suitable for one theatre of operation may not be so suitable for another. Some alterations are necessary to suit and consider.

The aim of this article is to study the employment of the standard infantry division in an undeveloped hilly terrain as existing along our Northern Border against a fairly well seasoned Army supported by guerillas in small numbers and consider:

- (a) how should the present organisation function, suggesting any changes necessary;
- (b) what changes are to be made in equipment, assuming that all new equipment can only be indigenous;
- (c) what special training is required in peace or before the division is committed.

LIMITATIONS IMPOSED BY UNDEVELOPED HILLY TERRAIN

In order to fully appreciate the problem, it is pertinent to be quite clear about the limitations imposed by undeveloped hilly terrain. The areas all along the Northern Border are sparsely populated and inhospitable. Communications are difficult, mostly consisting of mule or yak tracks in narrow, winding valleys dominated by hills on both sides. All-weather roads are a rarity. There are numerous rivers and nullahs which are in spate during the monsoon. Bridges over these, if existing, are mostly foot-bridges. Water is likely to be scarce during dry weather.

Such a terrain is ideally suited for guerillas, who generally operate in small units employing small, swift actions; continual mobility, emphasis on rear of flanking attacks, harassment of lines of communications and avoidance of pitched battles are the highlights of guerilla fighting. Such a terrain, however is unsuitable for operations by modern armies. They rob the attacker of the advantage conferred upon him by his superior equipment to a considerable degree and enable a determined but inferior force to hold up an enemy many times its own strength. Movement is confined to narrow, winding valleys which do not allow deployment of large forces. Battles are more

likely to be fought at brigade rather than divisional level. Enemy will oppose the advance by holding high features dominating the axis of advance. Large number of infantry would be needed for this purpose. Outflanking moves would often be necessary to avoid frontal attacks on high hills. These moves will have to be on mule or man pack basis.

As the border regions are being opened up, armour will be an asset and could be employed for road protection, close support of infantry and covering reverse slopes. Lack of space will restrict the choice of suitable gun areas; besides, field artillery will not be able to go beyond a three-ton road or off it. Demand on engineer resources is likely to be heavy to build and maintain communications and to bridge the numerous water gaps. Maintenance is difficult, and may very often restrict the number of forces that can be employed. Supply beyond 3-ton road will be on Jeep, pack or porter basis. To relieve the strain on administration, units and formations must be stripped of all unessential heavy armament, transport and other adjuncts. Also, at times, recourse may have to be taken to maintenance by air. Lightly equipped force with greater mobility will be better than heavy road-bound formations.

CHARACTERISTIC OF THE STANDARD INFANTRY DIVISION

The standard infantry division is designed to fight as a self-sufficient force in all types of terrain with a bias towards mobile warfare. It is capable of maintaining itself for long period in contact with the enemy. The organisation is flexible. Flexibility is achieved by providing sufficient headquarter staff, good signal communications and a balanced proportion of supporting arms and services which enable the commander to decentralise control and group his force in a variety of ways to suit varied tasks. Additional supporting arms, such as artillery regiments and armoured brigade, can be attached for particular operation when required. Its infantry brigades can be made lorry-borne. The division itself, less its heavy supporting arms and heavy vehicles, is capable of being transported by air.

The main limitation of this formation is its low infantry component against large support element and a huge administrative tail. It is therefore not very suitable for operations along the northern border. There is a definite requirement to increase the present striking infantry element of 8,100, strip the division of heavy armament and transport. It will make the division light, give it better cross-country tactical mobility and increase the ratio of teeth to tail.

CHANGES IN ORGANISATION

INFANTRY:

The present organisation allows for three Infantry brigades, each comprising three battalions. This is the main fighting element of the division, for whose support and maintenance the remainder exists. The strength of each brigade is approximately 3,000 all ranks. The strength of three brigades would be approximately 9,000 all ranks. These figures would appear to be out of proportion when we see that the total strength of a standard infantry division is approximately 20,000 all ranks. These figures reveal that more officers and men exist in the division for the support and maintenance than men with rifle and bayonets who carry out the actual fight,

In a hilly terrain there is always a need for more infantry to hold ground. The question arises as to the level at which extra infantry strength would be more advantageous. To add one more brigade to the division would mean a proportionate increase of supporting arms and services in the division as well as an additional brigade headquarters. This would not affect any reduction in the tail-to-teeth ratio and would thus make the division heavier. The experience gained in Burma reveals that brigades often had to be given more infantry and this was accomplished by adding another battalion to these formations.

A four-battalion brigade confers certain distinct advantages. Such a formation will have greater punch, greater holding power and more tactical flexibility than a three-battalion brigade. The present command and control set up of a brigade can without any appreciable increase, take in another battalion. A fourth battalion added to the present brigade would not require an appreciable increase in supporting arms and services. It would thus increase considerably the teeth-to-tail ratio, both at brigade and at divisional level, compared to the present organisation. Further, such a change does not involve any major reorganisation in the present set up, when required to be organised for operations in a hilly, undeveloped terrain. Command and Control, no doubt, will present a recurring problem in the suggested set up. This question can however be solved by more liberal and better use of wireless sets, which have been designed for greater range and selectivity. In addition, some air element in the shape of light aircraft and helicopters should be provided to improve the Command and reconnaissance capabilities.

At the moment we have no technical means of acquiring information about enemy movements and concentrations. In mountainous terrain, troops will be required to occupy wide frontages with bigger gaps between defended areas, localities which will make it all the more necessary that we should have some kind of surveillance and target-acquisition capabilities provided down to the infantry battalion level. The problem can be solved by making a provision of an organic radar section in the brigade headquarter. The section should be equipped with two medium-range and three short-range radars similar to that of AN/TPC-21 and AN/PPS-4 respectively (American equipment). The medium-range radar can detect personnel upto 5,000 meters and vehicles upto 20,000 meters; while the short-range radar has a range of 3,500 and 6,000 meters for personnel and vehicles respectively. This permits surveillance of the gaps between the battalions as well as to the front and flanks.

ARMOUR:

Armour can operate in the lower regions of northern border and its correct use will save casualties to the Infantry and speed up the advance. Its scope for employment will increase with the development of border roads. It will generally be used well up in the fire-support role. The machine gun fire from the tanks is effective upto 1,000 yards and the main armament can produce extremely accurately aimed direct fire, with high explosive and armour piercing shells, upto 3,000 yards as long as observation upto that range is possible. It can be used for road patrolling and in support of the infantry going to, or withdrawing from, picquets. The enemy can be completely surprised by getting tanks on to seemingly impossible places, where the enemy has in consequence no anti-tank defence. Zoji La (Kashmir),

Kanglatongbi (Assam) and several places in Italy during World War II are some of the examples.

The paucity of roads and tracks with low classification of bridges that one is likely to meet in such a terrain would not permit heavier types of tanks to operate. We should therefore aim at having a light tank with low silhouette. Its armour should be light, sufficient to afford protection against small arms fire and the fragments of grenades and artillery: its strength should be in its great offensive fire power capable of destroying strong points and enemy tanks at medium ranges. It must have excellent traction and must be capable of climbing steep hills. The weight of the tank should not exceed fifteen tons. At present, the general trend seems to be towards the creation of a universal tank which shall combine the characteristics of light and medium tanks available in the country. But, in light of the recent developments along the Northern Border, we might have to reorientate our future manufacture plans. The French light tank AMX 13 which weighs only 13 tons and carries a 75 mm high velocity gun meets the requirement.

ARTILLERY:

In hilly terrain there is not enough room to deploy a lot of guns, and those that are deployed may be in unorthodox positions. In these conditions the requirements of artillery are: sufficient range, high trajectory and cross-country mobility. Sufficient range is essential to allow flexibility and to cover outflanking movements from one position as there may not be any other positions. High trajectory is required for crest clearance and to allow for greater scope in selection of targets and gun positions. The use of upper register considerably eases this problem. The need for cross-country mobility is obvious so as to enable the artillery to accompany units moving off a road axis.

To ensure that a portion of the division operating off the main axis gets an intimate and close fire-support, it is recommended that one of the three field regiments should be replaced by a 3.7 inch howitzer mountain regiment on pack basis. The performance of the Canadian 75 millimetre pack howitzer is better than the 25-pounder gun, and this should replace the present 25-pounder. As an interim measure the other two field regiments should be issued with 25-pounder guns on Jury axle carriages drawn by the jeep.

The danger from aircraft when fighting in such terrain would not be as great as in normal operations. The present light anti-aircraft gun, in any case, is not very effective against modern jet aircraft. It is therefore, felt that light anti-aircraft regiment should be done away with and only one battery be retained, which should be the additional battery of the 4.2 inch mortar regiment. It might be argued that in mountainous country, wide dispersion is not easy, movement is largely canalised in the valleys and there are only limited areas suitable for the establishment of the depots and installations. Under such ideal conditions, heavy and continuous bombing of rear areas should have paralysing if not decisive effect. However, in Korean Campaign, this was not the case. The Chinese, by confining their movement to the hours of darkness, hard digging and skilful camouflage, were able to supply their armies and carry out troops concentrations for offensive action. Therefore, the protection of forward troops against enemy air must lie in our ability to have air superiority, good training and concealment.

ENGINEERS:

Our experience has already established the heavy requirement of engineer personnel and equipment in this region. The main task of engineers would be to improve existing roads and tracks or to make new ones. They will also be required for construction of airstrips for emergency supplies or evacuation of casualties, mine warfare, demolition works, provision of water supply and covered accommodation during protracted operations in the hills. In order to fulfil these requirements it is recommended that the field park company should hold more plant for rapid construction of roads, tracks, airfields and bridges. A light, class-5 bridge, capable of being transported on jeeps and 10-cwt. trailers, should be developed indigenously. Aluminium floating foot-bridge in slow currents would be ideal and therefore its introduction should also be considered.

SIGNALS:

Signal communications would be put to the maximum strain along the northern frontiers, mainly due to the hilly nature of the terrain; which is further likely to be accentuated by climatic conditions and lack of adequate communications. Wireless communication will take preference over line communication and therefore, arrangements will have to be made to ensure maintenance of wireless sets, charging of batteries and adequate rest period for operators. As the replacement and maintenance of equipment is going to be slow, there is a necessity for retaining reserves at selected locations. Demand on fault finding and repair of field cable routes will be much heavier as compared to normal warfare, and, as such, will involve an increment in linesmen. In order to make cable-laying and maintenance parties as light as possible, only light type of field cable in the form of dispenser coils is recommended to replace the heavier type of cables now held by divisional signal regiment, brigades and field regiment signals sections. Also lighter man pack cable layers will have to be evolved. Further the use of visual signalling and radio relay will pay dividends if suitable locations exist. Heavier type of specialist vehicles will not be able to negotiate gradient likely to be met. It is therefore essential that not only the number of vehicles is reduced but also the signal equipment such as medium-power wireless sets and terminal line equipment is fitted in vehicles which can easily operate under such conditions.

ARMY SERVICE CORPS:

In order to keep the division as light as possible and to make it mobile over country with indifferent communications, certain changes in the existing set up are considered essential. The organisation is closely linked up with factors such as anticipated rate of consumption of petrol, oil and lubricants, the means of transportation and the reduction in scale due to elimination of certain units. The second-line scale of petrol, oil and lubricants may be reduced to 25 miles per vehicle as against 50 miles halved per vehicle carried in the standard infantry division because of the comparatively slow rate of advance. Means of transportation will be progressively 3 or 5 ton lorries, 1 ton trucks, jeeps and animal transport as the advance progresses. Further it has been discussed to replace one of the field regiments with mountain regiment artillery; to do away with light anti-aircraft regiment and to restrict 'F' echelon transport of the infantry units to animal transport only. Keeping in view the above it is recommended that the mechanical transport should consist of four platoons of 3 or 5 ton lorries, two platoons of 1 ton trucks (4x4) and two platoons of jeeps with trailers. In addition

two companies of animal transport are considered adequate to meet the requirement. Experience has shown that the mules lose efficiency and find it difficult to operate beyond certain altitude. Therefore there is a pressing need for raising Yak companies or making alternative arrangements for the carrying of loads.

ARMY MEDICAL CORPS:

In mountainous terrain, early stages of casualty evacuation will be slow. It is therefore, important that the present medical set up be reinforced so that casualties receive treatment without delay. Three mobile surgical units and three field transfusion teams should form integral part of the medical set up in the division. When a casualty clearing station is not available within easy reach, one field transfusion team and one mobile surgical unit should be located at such a place so as to enable class I and II surgical cases to receive treatment within six hours. The existing field health sub-section under the control of the assistant director of medical services should be integrated, one each into the divisional field ambulances. This arrangement will enable them to meet their responsibility of ensuring good hygiene and sanitation of the force right from the beginning. Besides fitting most of the jeeps authorised to a field ambulance with stretchers and making use of mules for evacuation of sitting cases, there is a distinct requirement of pressing helicopters into service for evacuation of casualties.

TRAINING:

The severity of mountain fighting conditions demand of all ranks, all arms and services, the highest efficiency in their own particular arm. Success in such operations will depend on the initiative and skill of junior leaders and on the tactical efficiency of units and sub-units. Owing to difficulties of control in mountain fighting and the greater reliance which must therefore be placed on junior leaders and sub-units, a very high standard of minor tactics is essential. The infantry soldier should be trained to move across hills fully loaded, and be fit to fight on arrival in a new position. Troops must be physically tough and trained to live light and fight hard both by day and night. Map reading in a hilly country becomes more difficult; greater emphasis will have to be laid in training the junior leaders in map and air-photo reading. Ammunition will be in short supply, therefore, fire control must be of a high standard. Men must be trained to hold their fire till they can see 'whites' in the opponent's eye. The infantry should be trained to fight with very little support from other arms. Outdoor training must be carried out in all types of weather throughout the year. In a hilly country there is a likelihood of experiencing extremes of heat and cold. Troops not used to such rigours of climate are liable to suffer. Training imparted at the jungle and mountain warfare schools of instruction will certainly help commanders to train their units and sub-units on the correct lines.

CONCLUSION

To meet the requirements of mountain and guerilla warfare, the standard infantry division should be made lighter, given more cross-country mobility and a greater teeth-to-tail ratio. Therefore, four-battalion brigades should be introduced and the division stripped of heavy armament and transport. Howitzers should replace 25-pounder guns; engineers should hold more plant for rapid building of roads, airstrips and bridges. Signal and medical components should be strengthened and modified, and special training provided in mountain warfare.

THE GUIDED MISSILE

By Major A. BASU

INTRODUCTION

THE guided missile is a simple version of a rocket propelled aeroplane carrying a warhead. An ordinary aeroplane is normally manoeuvred by the manipulation of certain controls by the pilot. A guided missile is manoeuvred by actuating the mechanical control through electro-mechanical or pneumatic means. In most cases, missile itself derives and affects the particular control required for a desired manoeuvre without any human element being present. Hence, the control or guidance aspect becomes more involved and difficult to achieve than in a normal aeroplane.

The term "guided missile" now-a-days is used frequently by many. We have not only discussions on the guided missiles and the various forms of it, e.g. antitank, ground-to-air, air-to-air and so on, but also the controversies on subject like "guided missiles or manned aircraft. It is necessary, particularly for the service personnel, to have some knowledge about the basis of the guided missile.

This paper discusses in simple and fairly non-technical language the following aspects of the guided missile:-

- (a) The flight of a missile,
- (b) Mechanism of Flight Control, and
- (c) Control and guidance.

THE FLIGHT OF A MISSILE

A missile flies in the air, being propelled by a rocket motor. For short-range missiles, the rocket motors are invariably solid propellant rockets. Long-range missiles have usually liquid propellant rockets. The rocket motor consists, in general, of two parts: the boost and the sustainer. The boost part burns off very fast and develops a large forward thrust accelerating the missile to the designed velocity in a short time. The sustainer part burns slowly and develops enough acceleration for the missile to maintain its velocity against the opposing forces, viz., air resistance, throughout the desired path of the missile. There are some missiles, however, in which there is no sustainer motor. These, after being boosted, glide through its desired path with gradually decreasing velocity. These are called "coasting" type of missiles.

The forward velocity of a missile being dependent on the task the missile is required to perform, is different for different types of missiles.

This forward velocity generates various forces on the body and wings of the missile. These forces, firstly, neutralize the gravity pull thus keeping the missile flying without losing height, and, secondly, provide necessary lateral accelerations to turn the missile for manoeuvre. Technically these forces are known as "aerodynamic forces".

Aerodynamic forces:

These forces are developed due to motion of a body in a fluid medium such as air, in case of missile flying in air and depend on the shape of the surface of the body. Specially shaped bodies, in which large aerodynamic forces

develop, are called "Aerofoils". The aerodynamic forces are mainly two: one acting perpendicular to the direction of motion called "Lift" and the other along the direction of motion but acting in the opposite way called "Drag": as illustrated in Figure 1.

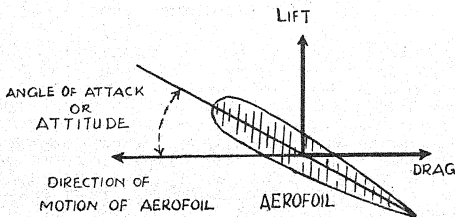


Figure 1:—Lift and Drag forces on an aerofoil.

The Lift and Drag Forces on an aerofoil increase with the increase in angle it makes with the direction of air flow, so long as the angle is less than a maximum limit. The direction of air flow is opposite to the direction of the movement of aerofoil. The angle between the direction of movement of the aerofoil and its body axis of symmetry is called the angle of attack or attitude. That is, the attitude is the angle at which the aerofoil surface is held against the wind, moving past it. We have already stated that the aerodynamic forces depend on the shape of the surface which is exposed to the windflow. Thus, by either changing the attitude of the surface or by carrying out change of shape with special fixtures, the values of aerodynamic forces can be altered.

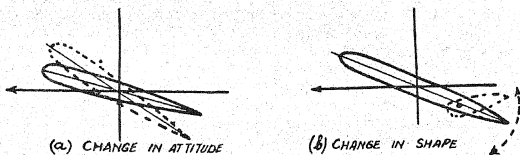


Figure 2: Alteration of Aerodynamic forces on an aerofoil.

In a normal aeroplane, the wing and the tail are constructed as aerofoils to develop the aerodynamic forces required for the flight of an aeroplane. There are hinged surfaces on the wings and tail whose attitude can be changed through the pilot's controls. Thus the pilot can control the flight of the plane by varying the aerodynamic forces as required.

Similarly, on a missile body aerofoil surfaces are fixed as wings and fins. The wings provide the main aerodynamic forces and the fins stabilize the missile body in flight as in the case of an aircraft. Usually the wings are fixed to the body and the fins are hinged so that their attitude can be changed to produce a variable component of force acting on the body. The movement of fins is carried out by an actuating mechanism operated by the guidance and control system of the missile. Thus, by rotating the fins, the total aerodyna-

mic forces may be varied; the fins thus constitute the control surfaces. There are some missiles in which the fins are fixed and the wings themselves are hinged and their attitude varied by the Guidance and Control actuators.

Now, before we discuss how the flight or manoeuvre is controlled, it is necessary to understand the conditions necessary for the steady and stable flight of a missile. The most essential condition is that the forces acting on the complete missile balance each other, making the total force acting on the body to be zero (i.e. the forces are to be in equilibrium); these turning moments are also to balance each other, making the total zero. This will be understood more clearly by examining the aerodynamic forces developed in a flying missile as shown in Figure 3. (The arrangement of aerodynamic forces shown is just to elucidate the idea of equilibrium. It does not show the technical details,

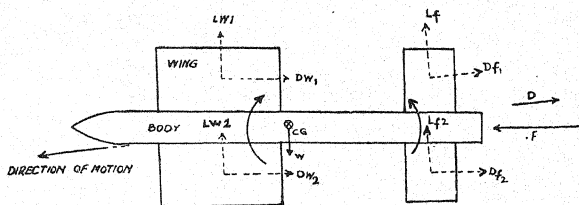


Figure 3:—Example showing how forces and moments balance.

LW—Lift forces on Wings.

LF—Lift forces on Fins.

DW—Drag forces on Wings.

DF—Drag forces on Fins.

D—Drag forces on Wings.

F—Thrust of rocket motor.

W—Weight of missile.

CG—Centre of gravity.

It is apparent that for equilibrium of forces $LW1 + LW2 + LF1 + LF2 +$ Vertical component of F equals W . And $DW1 + DW2 + DF1 + DF2$ equals component of F along direction of motion, for the missile to travel forward with uniform velocity. If the drag forces are less than the component of F , the missile moves forward with an acceleration (increasing velocity). Now since the resultant of the forces $LW1$ and $LW2$ does not pass through the CG, the missile would tend to turn upwards in the absence of the fins. The forces $LF1$ and $LF2$ constitute a turning moment which tend to turn the missile downwards and balance the upward turning moment due to $LW1$ and $LW2$. This explains why previously it was stated that fins are used for stabilising the missile. It is not possible to develop the Lift forces on the wing passing exactly through the CG and as such fins are necessary to provide the opposite turning moment.

Stability in flight:

But, to be able to fly steadily, it is not enough to have the forces and the moments being in equilibrium; it is also necessary to include devices so that if the attitude of the flying body is changed due to some disturbance, the body returns to its original attitude. Also, in the process of re-gaining the original attitude, the body should not continue to oscillate.

CONTROL OF FLIGHT

So far we have seen that if the aerodynamic forces and moments balance and the stability conditions are fulfilled, the missile performs a steady flight. This flight will have a straight-line course. To deviate the missile from a straight course, a lateral acceleration (acceleration perpendicular to the flight course) will be required. This lateral acceleration, in aerodynamist's language, is called "Latax".

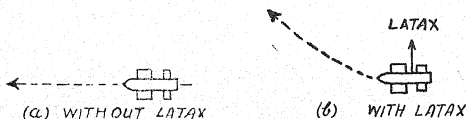


Fig. 4: Change of Missile Flight Course.

For manoeuvre in the vertical plan, i.e., either to go up or down, latax in the vertical plane will be required. Similarly, for lateral manoeuvre, i.e., to turn left or right, Latax in the horizontal plane will be needed. For any manoeuvre, in which the missile is required to go up or down, and left or right, Latax is required to be created both in vertical and horizontal plane. Any constant lateral acceleration in a particular direction will make the missile go in a circular path till the acceleration is present. The greater the force causing the acceleration, the greater will be the rate of turn and lesser, the turning radius.

A missile has normally two sets of wings fixed to the body in perpendicular planes in the shape of a cruciform. (This is called cruciform configuration).

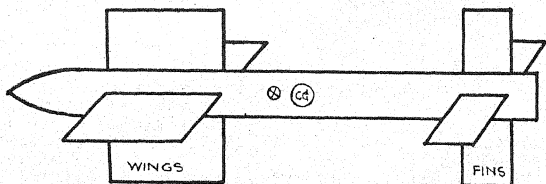


Figure 5: Cruciform Configuration.

In addition, usually there is one set of cruciform fins in the same planes as the wings. In a fin-controlled missile, the fins are hinged to the body so that they can be rotated.

Let us now consider that the missile is performing a straight horizontal flight (level flight) with one set of wings and fins vertical and the other set making a small angle with the horizontal. This small angle develops the lift force required for a stable flight. At this time the vertical set, not making any angle with the direction of motion, does not develop any forces. Suppose the missile is now required to go up in the vertical plane. Obviously a verti-

cally upward force will have to be brought in to provide the necessary Latax. Since the missile is flying horizontally, a vertically upward force can be generated by increasing the attitude of the horizontal wings. Increase in attitude of wings will produce greater lift force in the upward direction and there will be more force than required for the level flight. This additional force, thus created will provide the 'Latax'. The attitude of the wings can be increased by directly turning the hinged wing through an actuator mechanism (in the case of wing-controlled missiles). It is, however, more common in missiles to have the wings fixed to the body and to turn the whole body to provide the increased attitude of the wings. To turn the missile body, an unbalanced moment is created by the control surface.

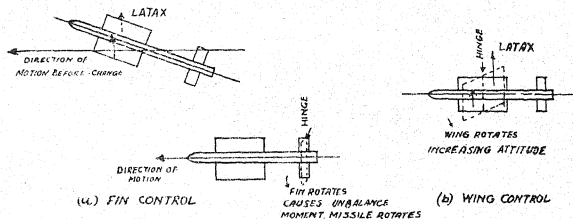


Fig. 6: Latax Development in a missile.

Thus in this type of missiles with the wings fixed, the control surfaces (fins) are first rotated through actuators resulting in turning of the body. This turning gives increased attitude to the wings, thus producing the 'Latax'. The mechanism to make the missile go downward is just the reverse. The attitude of the wings is now to be decreased to provide downward acceleration.

The vertical wings should be oriented at zero attitude, when manoeuvre in the vertical plane only is required. When manoeuvre in the horizontal plane is necessary, the Latax is developed by these vertical wings. If a left horizontal turn is needed the vertical wings must be held at an angle towards the left from the direction of flight causing a left-wards aerodynamic force to be developed. Again, this angle may be produced by turning hinged wings or turning the whole body with the help of control fins as the case may be. The larger this angle, the larger will be the force developed. A performance of a right turn will be similar, except that the wings now will have to be held at an angle to the right from the flight direction. As already stated, the manoeuvre in an arbitrary plane will be a combination of both vertical and horizontal turns.

It is worth stressing that the lateral force is developed by the wings themselves. The control fins only turn the missile body so that the wings present the right angle to the direction of motion. The maximum lateral acceleration that can be developed depends on the dimension and type of the wings. This limits the maximum rate of turn of manoeuvre of a particular missile.

GUIDANCE AND CONTROL

It is clear now that controlling the manoeuvre of the missile involves rotation of either the control surfaces or the wings by the right amount in the right direction. Broadly it can be stated that the job of the 'guidance' part is to derive the information about the amount of rotation required to keep the missile on the desired course, and the 'control' section effects the actual rotation.

GUIDANCE

There are various types of systems employed for guidance, depending on the role of the missile. These systems can be classed mainly as follows:

- a) Command guidance,
- b) Beam riding system, and
- c) Homing system.

Command System:

In this system, the target and missile is tracked normally with radar sets and the course required of the missile to hit the manoeuvring target is worked out by an electronic computer in terms of up/down and left/right movements. This information is sent to the missile receiver through radio channel.

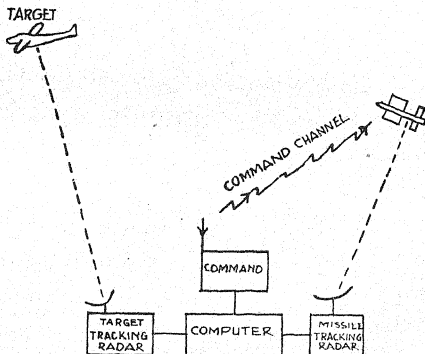


Figure 7: Command system of guidance.

The missile receiver receives the information and passes it on to the control system.

Line-of-sight command:

A variation of command system is the line-of-sight command.

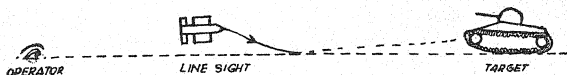


Figure 8: Line-of-sight command system of guidance.

In this system an operator sights the target (fixed or slowly-moving ones) and endeavours to keep the missile on the line joining himself and the target. As the missile goes away from the line of sight, the operator moves a control to bring the missile back to the line. This movement of control is analysed for the up/down and left/right movements required of the missile and the necessary signals are sent to the missile usually through wire. This system is generally being used in anti-tank missiles.

Beam-riding system:

In this system the target is followed by the missile-gunner through a radar set and the missile flies to the target keeping itself always on the radar beam. As soon as the missile goes off the beam, a guidance signal is produced inside the missile to bring the missile back on the beam. When the target manoeuvres, the gunner shifts the radar beam to follow the target. The shifting of the beam is automatic in the more modern target-following radars.

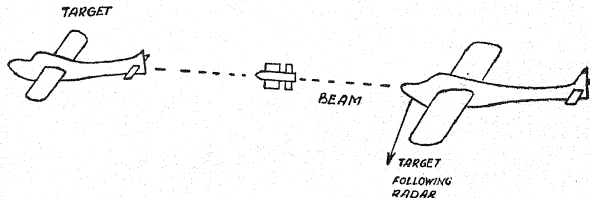


Figure 9: Beam riding system of guidance.

Homing system:

As the name implies, a homing type of missile derives its guidance from some radiation property of the target itself. This system is very effective for ground-to-air or air-to-air weapons and can be broadly sub-divided as 'active', 'semi-active' and 'passive' homing devices.

Active Homing:

In active homing, the missile sends out radiations (radar, or sound) which when falling on the target, are reflected back from the same. The reflected radiation is received by the missile which follows it. Since the generation of radiation involves bulky equipment on the missile, this system is usually not adopted in lighter missiles.

Semi-active Homing:

This system requires a separate source to illuminate the target with some radiations, and the missiles follow the radiation reflected from the target. In the existing semi-active homing systems, radar is used to illuminate the target. This method is being generally utilized for ground-to-air (Anti-aircraft) missiles.

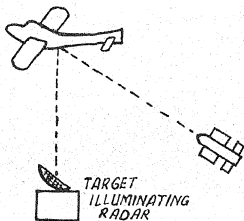


Figure 10: Semi-active Homing system of guidance.

Passive Homing:

In this system of guidance, the missile carries a receiver which is sensitive to some parameters emanated by the target itself. In known missiles of this type, the Infra-red (heat) rays emanated from the jet exhaust of an aircraft are received by the missile's infrared-sensitive receiver which is called the homing head. As the target manoeuvres, the homing head turns in such a manner that the target is kept in view. The amount of turn also determines the manoeuvre required by the missile to stay on the desired course of pursuit. This last type of homing has, therefore, gained great importance recently for use in air-to-air missiles (i.e., missile used by a fighter aircraft to combat a bomber aircraft).

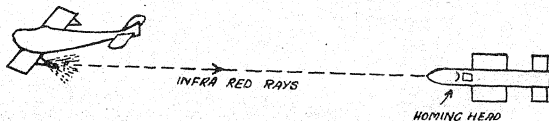


Figure 11: Passive Homing system of guidance.

CONTROL

Once the guidance signal has been obtained the control mechanism processes the signal, amplifies and effects the correct amount of rotation to the fins or the wings as the case may be. The component which rotates the aerofoils are called actuators. Actuators can be either electro-mechanical or electro-pneumatic. Electromechanical types convert mechanical rotation directly from electrical voltages. Electro-pneumatic ones are operated by gas at high pres-

sure. Pistons work in cylinders in which gas is led in through valves. These valves are operated by transducers worked by electrical voltages.

Missile in Roll:

A problem about control has not been brought out so far to avoid confusion in the reader's mind: that of the missile which, in stable flight, tends to roll along its axis; thus, the same pair of wings or fins at some instant become the horizontal pair, and at some other instant the vertical pair. In many missiles, the control mechanism can apply a break to this roll movement. These are called roll-stabilized missiles. In a rolling missiles the left/right demands and up/down demands have to be continuously changed over from one pair of control surfaces to the other pair at correct instants. This is called roll-commutation. Whether to roll-stabilize or to roll-commutate, it is essential to know the roll position (angle) of the missile with respect to a fixed datum. Gyroscopes and electro-mechanical transducers are necessary for this.

CONCLUSION

As the guided missile is a weapon of great consequence in the present-day warfare, it is useful for the members of all the three services to have a clear concept of it. It should, however, be appreciated that widely varying techniques are used in the large number of types of missiles in the field. There are many other principles and techniques in use which have not been touched in the paper in order to keep it as simple and non-technical as possible.

MILITARY AIR TRANSPORT

By Lieut.-Colonel M. L. KATARIA

THE present-day situation underscores the dire necessity for a heavy commitment of our armed forces along the entire frontier in the Himalayan ranges. This is one of the world's most difficult terrains, marked by jungle-clad mountains, un-negotiable waterways and the most primitive or non-existent surface communications.

In order to maintain large forces in this region, extensive use of air transport as a major means of a communication for troops and their supplies and maintenance, appears to be inescapable.

As this air transport requirement is likely to be more or less of a permanent nature, we must, in the long run, achieve self-sufficiency in it by attaining a totally indigenous production, especially in view of the various political and economic circumstances. In the meantime, however, we have to meet our requirements from suitable foreign sources.

In the above context the aim of this article, is to study:

- (a) the types of military air transport best suited to our needs and conditions, and a general survey of the various transport aircraft now in use by the foreign powers, and
- (b) command and control of the air transport.

TACTICAL AIR TRANSPORT

The ideal tactical transport aircraft for use in the Himalayas should provide maximum flexibility in range and payload to make it more versatile and thus to reduce necessity for many types of aircraft to achieve economy. It should have high degree of manoeuvrability and stability at all speeds, all-weather performance, good loading facilities, and short landing and take-off capabilities, within about 500 yards. Its cargo capacity should be nearly six tons, or at least a platoon of paratroops or about the same number of stretcher casualties. It should have a cruising speed of around 150 n.m. and a range of at least 15,000 n.m. It should also be capable of lower speeds to be able to drop para-troops and heavy loads.

Several such transport aircraft have been designed and produced abroad; to mention a few— **American:** Douglas C 133, Lockheed Hercules C 130, Fairchild Packet C119, Fairchild Provider C 123; **British:** Blackburn Beverley, **Russian:** Ukrania AM 10.

Fairchild Provider C 123 approximates closely to our requirements of a tactical transport aircraft mentioned above. It has two piston engines of 5,000 H.P. It has a cargo capacity of six tons with blackloading facilities, or 60 paratroopers, a cruising speed of 165 n.m. per hour and a range of nearly 1,500 miles. It can land fully loaded within 500 yards. It can also land on grass and even on ploughed fields.

BATTLEFIELD AIR TRANSPORT

We do require battlefield transport aircraft to convey troops and supplies to forward areas beyond the capabilities of tactical transport aircraft. Such an

aircraft should be capable of VTOL and/or STOL within two to four hundred yards. Besides facilities for loading, it should have a payload of over a ton for range of about 700 miles in case of fixed-wing aircraft and about 150 to 200 miles in case of rotating wing aircraft, in view of dispositions of the forward-most troops. It should be capable of conveying about a section or preferably a platoon of paratroops or 15 to 20 stretcher cases.

Besides air supply, the battlefield aircraft, especially the VTOL type, can be useful for multiple purposes, such as provision of tactical mobility at critical situations, inter-communications, air observation posts, traffic control, liaison duties.

A number of fixed-wing aircraft suitable for battlefield transport support have been produced abroad, but for our purposes the British Twin Pioneer now in use in the RAF, the Russian AM 2S and the Canadian Otter should attract our attention.

The Otter has a payload of one ton over a range of about 900 n.m. It can carry 14 troops or ten paratroops or six stretchers. It can take off or land within 350 yards. The capabilities of the other two aircraft are approximately the same.

A large variety of rotating-wing VTOL aircraft of different capacities have been designed and produced abroad, such as the British Saunders Roe Skeeter, Bristol 171, Westland Whirlwind, Bristol 173, Fairey Rotodyne, Westland Westminster; American Bell 13D, Hiller H 23, Piasecki—H 23, H 25, H 21B XH 16, Sikorsky 55, S 56, S 58, S 62, Hughes—XH 17, XH 28; Russian MI 6.

However, to meet our requirements, three of these deserve a mention. The Westland Westminster has a range of 180 n.m. at an altitude of 8,000 feet. It can carry 50 fully armed troops or 40 stretchers. It can also be used in a flying crane role, bridging operations, assault role and so on. Six such aircraft can convey 120 tons of stores in two and a half hours over an established bridgehead. Sikorsky S 56 has a payload of 6,000 lbs over a range of about 220 n.m. and it can carry 23 troops or 15 stretcher cases. Sikorsky S 62 has a payload of one ton and can carry about 12 troops. It can take off and land in water also. In fact, our requirement is for VTOL aircraft which can go up to a height of 20,000 feet; and as yet this requirement is not being met by any of these aircraft.

COMMAND AND CONTROL

In view of an anticipated large-scale increase in the air transport, it is pertinent to consider its command and control.

It is an age-old principle that the command and control of any equipment should vest in its user. Since air transport would be created for exclusive use of the army, ideally it should be raised as military air transport, as a part and parcel of the Army, like the surface transport. In fact, such a system of command and control of the military air transport exclusively by the Army is already in vogue with some foreign powers.

However, in view of several factors, particularly training, operation and maintenance, it may not be feasible for us to integrate the air transport with

the Army for the time being. The ultimate command of the air transport, under the circumstances, should advisably be retained by the Air Force.

But, to ensure flexibility, economy of effort, and allocation to the tasks according to pre-planned priorities, a centralised command of the enlarged air transport fleet would be imperative. Hence, the requirement of a separate air transport command of the Air Force stands out prominently.

Although, the ultimate command of the air transport in our case should rest with the Air Force, yet, in order to associate intimately the exclusive user, the Army, creation of a Joint Services Directorate to control the detailed use of the air transport would perhaps be more advisable. Such a Directorate should include representatives of both the Services at the highest level centrally to control the actual use of the air transport. Consequently, maximum flexibility, economy and concentration of effort where necessary would be ensured.

CONCLUSIONS

To cater for the day-to-day needs of the land forces deployed along the mountaneous north-western, northern and north-eastern frontiers of India, air transport in preference to the surface transport, is an inescapable necessity, in spite of any financial implications.

As air transport is likely to be a permanent requirement, indigenous self-sufficiency in this respect in the long run is of paramount importance. However, in the meantime, we may have to depend on one or more than one foreign sources to meet our tactical and battle-field air transport requirements.

As an ideal, command and control of air transport should in the long run be vested with its exclusive user, the Army; however, in the meanwhile, for several reasons, is centralised command by the Air Force and a central control of its use by a Joint Services Directorate at the highest Army and Air Force level is warranted to achieve maximum flexibility, economy and concentration of effort where necessary.

A PLEA FOR A MORE INTENSIVE UTILIZATION OF EX-SERVICEMEN

By Brigadier N. S. RAWAT, Retd.

IT is probably not fully realised by quite a few people that there are, over three lakhs of ex-servicemen spread all over the length and breadth of India: men, who, during their 15 to 30 years of service in the armed forces, had, from all counts, done the nation well. In course of their service in the defence of the country in the hills of the N.-W.F., on the northern borders at bleak, inhospitable heights of over 16,000 feet and in the N.E.F.A. where, verily, the three empires meet and while fulfilling our international obligations to the United Nations in the Korea, the Indo-China, the Gaza Strip and the Congo, some of these men lost their limbs or became incapacitated for life: whereas a few laid down their lives in the performance of their duty and their mortal remains lie enshrined in many a cemetery in distant lands. Wherever they served, these men earned high praise for their courage and devotion to duty, sacrifice for high ideals and cheerfulness in face of tremendous odds. Their loyalty, honesty and integrity have won them friends and admiration all the world over.

A full use, however, is not being made of the technical skill, varied experience and the general broader outlook gained by these ex-servicemen during service in the country and abroad. It is high time the prejudice or ignorance about them prevailing in this country be replaced by genuine tolerance and encouragement, more so at a juncture when the nation is engaged in a stupendous effort to raise the standard of living of the people by means of five-year plans and when the country needs the special skills and ability possessed by the ex-servicemen in various projects or ventures. Some of the outstanding traits of these men may be listed as under.

Loyalty, honesty and integrity: By the very nature of his duty and the circumstances in which he is placed, a serviceman has to put national interest above everything in all that he does. 'Duty before self' becomes his motto and his second nature. Any government, concern or institution would welcome this vital quality in its employees.

Discipline: From the very moment the soldier enlists as a raw recruit, the sense of discipline is instilled in him day in and day out. To obey the order of his superior is a 'must' for him, and, before long, he gets thoroughly disciplined. Again, no group of men in an industry or undertaking, in school and college—even in political organization—can do without this essential commodity, discipline. So, a fair mixture of disciplined personnel would be a very wholesome adjunct to our present-day labour; their example may bring about far more radical and effective results than long sermons or pious resolutions.

Punctuality and attendance: During his long service the serviceman becomes so used to the idea of doing things at the stipulated time that he can be safely trusted to be at his post or seat at the given hour. He would not need elaborate time-recording devices or arrangements, and, what is more, he shall work hard, not gossip nor loiter during the working hours. He will not

indulge in go-slow tactics; on the other hand, he will not mind working for sometime even after the closing-down time with a view to complete the work allotted to him. He can be relied upon to attend to his duty in spite of rain or snow, or a bus or tram-strike. He will not resort to absenteeism on petty or frivolous grounds. All this will result in a saving of thousands of man-hours.

Physical fitness: The regular life in the armed forces, with half-an-hour's physical training early in the morning, regular games in the evening, a proper medical cover provided by expert doctors, a balanced and wholesome diet prepared in a hygienic manner and living under very healthy and clean surroundings cannot but build perfectly healthy and tough individuals. Such men can stand up to hard and rigorous work and not get easily tired under stress and strain. Naturally, with such type of personnel in a concern, the rate of production would be very high and easily comparable to the best in the world.

Ability to make decisions or use initiative: My experience of over five years' working in an autonomous corporation, which probably is not very different from what is to be seen in other organizations of the kind, is that there exists among some of the executives a great dread of taking the responsibility for doing anything or acting on their own, especially in unoward circumstances. The tendency is to wait for orders of the higher authority, and written ones at that, before acting at all, even in an emergency. There are certainly some circumstances which encourage such attitudes; for instance there is the justifiable fear of the awe-inspiring Estimates Committee, Public Accounts Committee and the Question Hour in the Parliament, and of the scathing attacks in certain sections of the Press. At any rate, there appears to have occurred an emasculation of the administrative set-up, which has been aggravated by the militant labour leadership thriving in a welfare atmosphere. The result is that executive appears to feel that he will be brought to book for the least deviation from the written word that results in any loss, however remotely, to the concern or the government. So he tends to take shelter behind precedents or orders of the superiors even when the authority may not be available within reasonable time. This latter tendency, of course, is of no recent origin. I am reminded of a classic case of such waiting for orders which took place about thirty years ago. A fire started in a bazar adjoining the capital of a hill state. There was a fire-fighting engine, but it could be used only on the personal orders of the Dewan. As ill-luck would have it, the latter had been summoned by the ruler, then basking in the Riviera, to arrange for additional funds. Urgent cables were sent to the Dewan as the fire raged and a strong, merciless wind blew it towards the capital, the treasury. By the time the message could reach and the much-awaited command, "Move the fire engine!" came, the capital had been reduced to ashes.

It is imperative that the power to take action be inculcated amongst the officers and administrators at various levels. The man-on-the-spot should be given full latitude and power to act. He should be allowed to act according to his judgment, and, unless his action subsequently proves to have been definitely wrong and in bad faith, the authorities should support him and not leave him high and dry. That was the crux, the essence of the British administration. It is also a part of the fine tradition of the Indian Army, or indeed any fighting force of merit. Therefore, a fair import of such blood from the Services into the administration will pay rich dividend.

Proper delegation of authority: An officer in the armed forces has to properly delegate his authority to his subordinates and ensure that the latter, in their turn, do the same, otherwise the system just cannot work. This quality, too, does not appear to obtain in good measure in all walks of civil life. There appears to be a good deal of zeal and enthusiasm at the top, which has led, among other things, to over-centralisation. The infection of over-centralising spreads down the ladder, militating against the growth of initiative and free-play. Judicious placing of ex-servicemen in positions of responsibility may provide the corrective.

Varied experience and technical knowledge: Amongst the ex-servicemen will be found unskilled as well as skilled workers, technicians and specialists of a wide variety. There will be aircraft pilots, mechanics, artificers, electricians, radio and wireless operators, signallers, engineers, welders, carpenters, masons, brick-layers, intelligence and security and postal workers, drivers of military transport, marine pilots, divers, cleaners, cooks, and, at the other end of the scale, high dignitaries like ambassadors and governors. Judiciously placed, the ex-servicemen would form little solid oases in midst of panic during a crisis and act as the nation's steel frame or backbone in times of dire need.

It is said that the western countries like the U.K., the U.S.A. and Germany and even Russia tap such ex-military talent freely and without hesitation. Why should we fight shy of utilizing this available reserve of dependable, hard-working and dedicated human material?

MORALE

The prospect of gainful and significant re-employment would boost up the morale of the serving men all over. Once a sepoy, or a non-combatant for that matter, knows that, even after his retirement from the service or being invalidated out on medical grounds, he shall be able to supplement his pension (no longer that meagre now) by getting a suitable job nearer his home in consonance with his capabilities, his morale would rise sky-high. The nation could safely trust him do his very best. Not only that, the youth of the country would flock to join the armed services because they would know that while they are devoting the best years of their lives to the defence of the motherland, the service would also prepare them to continue their useful work after they retire, and that they would be able to take part in the mighty enterprise of ushering in the new era of development and prosperity in the country.

ROLE OF THE SUBMARINE

—A STATISTICAL STUDY

By Sub-Lieutenant VISHNU BHAGWAT, I.N.

"Indeed, one of the most important Characteristics of the Successful Officer of today is his ability to continue changing his methods, almost even his mental process, in order to keep abreast of the constant change that modern Science brings to the Battlefield."

DWIGHT D. EISENHOWER

INTRODUCTION

THE object of this study is to bring to light, by facts and figures, the decisive potentialities of the submarine, and show how the submarine is the cheapest and yet, perhaps, the most effective weapon existing today. From a study of World War II certain lessons can be learnt. From figures available today certain amount of thinking is possible for the future.

As far as World War II is concerned only few people know the exploits of the submarines, except perhaps of the German U-Boats. They fought no spectacular battles which might splash the headlines. The National War Colleges set the study of this warship aside. Yet the submarine did what no other type of ship could do. It operated all alone, unlike any other ship, and, despite the meagre attention paid to submarine warfare before the War by both the Allied and the Axis Countries, it turned out to be the dominant weapon of World War II. We should also remember that World War II demonstrated that it was not on the battle field that the result of the War was mainly decided but on the destruction of the enemy's war potential and economy. With the vital supply lines extending across the Atlantic ocean, the Baltic, Mediterranean and Black seas, it was also this war which convincingly demonstrated the potentialities of the submarine as a weapon for undermining the enemy economy. Since then, of course, both the range and the fire-power of the submarine have been immensely augmented with the development of the Polaris missile and nuclear propulsion.

Winston Churchill, speaking of World War II said, "The only thing that ever really frightened me during World War II was the U-Boats peril. Invasion, I thought even before the Air Battle, would fail. After the air victory, it was a good battle for us, we could drown and kill this horrible foe in circumstances favourable to us, and as he evidently realised, bad for him. It was the kind of battle which, in the cruel conditions of war, one ought to be content to fight. But now our life-line even across the broad oceans and especially in entrances to the Island was endangered. I was even more anxious about this battle than I had been about the glorious air fight called the Battle of Britain."

Again, speaking of the Submarine Service at the end of the War, and recapitulating their achievements in the defence of Malta and the cutting off of Axis supplies for Africa, he said, "Great deeds have been done in the Air and indeed on land but nothing surpasses your exploits."

That was 20 years ago; today, the submarine is the "giant-killer". Even the Russians, believed by many to confine themselves to a land strategy, have realised, in Mr. Khrushchev's words, that "Struggle at sea must precede the concluding victory over land."

As an anti-submarine weapon, the submarine has been given the utmost importance. Britain's first two nuclear submarines are specially designed for A/S work.

Aircraft as anti-submarine weapons are ineffective against the True Submarines. Conventional destroyers are too slow and lack endurance. Aircraft carriers are too expensive. Unless the Navy develops surface ships with hydrofoil or catamaran configurations to enable them to reach higher speeds, it seems that most surface ships will be obsolete in few years.

The Arctic will be the future home as well as the hunting ground of Nuclear Submarines. There, no other type of warship or aircraft can operate. That is the new strategic battle-field and the launching ground for submarine-based missiles.

The submarine is the outstanding strategic and tactical weapon of the nuclear age. It qualifies as the ideal deterrent. It is the only weapon which can cover the entire globe while fulfilling all the exacting demands of war: mobility, endurance, surprise and an almost absolute degree of immunity. In short we see for the first time in history that an essential Naval Arm, the submarine, provides the decisive weapon for any future war.

WORLD WAR II

Submarine warfare was unwanted and unexpected by Hitler, unprepared for by the German Navy. It was the loss of its naval fleet that forced the Nazis to confine the German naval effort to the U-boats. However, it was only after 1943 that the entire German naval effort and a large part of its war production were concentrated on making the submarine warfare a success. By then Germany had already lost the battle of the seas.

Table 1

Submarine Strength of Navies at the beginning of World War II

Axis Countries	Allied Countries
GERMANY: 57 including 26 ocean-going type)	U.S.A.: 111 including 70 ocean-going type.)
ITALY: 60	U.K.: 57 (of various description, including small coastal boats)
JAPAN: 60 (including 47 ocean-going type)	U.S.S.R.: 235 (mainly small coastal type)

While only one-third of the German submarines could actually be present in the War Theatre, one-third being on passage to and fro and the remainder repairing and refitting, they played such havoc that Great Britain would have been starved to defeat had Germany been thoroughly prepared for Submarine Warfare.

With the United States entering the War in 1942, the fight became an uneven struggle. For every German submarine at sea, the Allies had ten anti-submarine ships and twenty A/S aircraft. The German Air Force never co-operated with the Navy's submarines. Despite this, the Allies could win the battle in the Atlantic only by a narrow margin.

The United States Submarine Fleet constituted an outlay of merely 0.7% of the total expenditure on the U.S. Navy during World War II. For the first six months of the War in the Pacific, the submarines were the only American naval craft to operate against the Japanese.*

Axis Shipping Tonnage Losses

The North African Campaign has been studied by almost every Officer and it will be interesting to know what part the Allied Submarines played in it.

More than half of the Logistic Supplies to the German Army in Africa were sunk by the submarines. Rommel and his Staff repeatedly implored Hitler for tanks, petrol and food. Little of it could reach him across the seas patrolled by the Allied Submarines.

While the Allied Armies marched over Africa flying their victorious banners, the submarines did their job silently and effectively.

Table 2

Allied Shipping losses per year in the Atlantic-Mediterranean Sector

Year	Ships lost	Tonnage (in million tons)	No. of U-Boats at Sea	No. of Allied A/S ships and Aircraft in Ops. Vs. U-Boats
1939	110	0.45	23**	—
1940	461	2.25	70	—
1941	430	2.2	100	—
1942	1,786	6.2	210	600 ships & 1,500 Aircraft.
1943	820	2.5	300	—
1944	100	0.6	200	1,000 ships & 2,000 Aircraft.
1945	40	0.2	200	—

* Chester W. Nimitz, Admiral, in "Submarine Operations"—Official U.S. Naval History

** About 9 at set at one time

COST OF SUBMARINE WARFARE*

During the entire World War, II, the U-Boats Service mustered 40,000 men who made up its active Service personnel, manned 1,168 operational U-Boats and sank 14.2 million tons of enemy shipping. To combat this small, lethal band of men and ships, the United States and Great Britain spent over one hundred billion dollars and it taxed 25 % of the resources, scientific talent, production and ingenuity of the two nations. In January, 1945, the United States, alone, had 2,00,000 men, 1,500 aircraft and 800 surface ships directly in operation against Germany's paltry 100 Submarines at sea.

The Germans and Italians are estimated to have spent just half the amount, viz., 50 billion dollars on Submarine Warfare.

Official U.S. Navy Statement on U-Boats Operations in 1942-43 on the U.S. East Coast is quoted below.

"The massacre enjoyed by the U-Boats along our Atlantic Coast in 1942 was as much a National Disaster as if saboteurs had destroyed half a dozen of our biggest war plants.

"If a submarine sinks two 6,000-ton ships and a 3,000-ton tanker, here is a typical account of what we have totally lost: 42 tanks, 8 6"-Howitzers, 88 25-Pounders, 42 2-pounder Guns, 27 Armoured Cars, 50 Bren Carries, 5,210 tons of Stores and 1,000 gallons of petrol.

"Suppose the three ships had made the home port and their cargoes disposed. In order to knock out the same amount of equipment by air bombing, the enemy would have to make 3,000 successful bombing sorties."

SUBMARINE CONTRIBUTION TO AMERICAN VICTORY

At the beginning of the War in the Pacific in 1942, Japan, including the occupied territories of Korea, Manchukuo, China and Formosa, produced 8 million tons of steel (c.f. U.S.A.'s production of 80 m. tons.) and 4 % of her petroleum requirements, imported 20 % of her food needs and was totally dependent on imports for her nonferrous metals and rubber requirements.

Two million tons or 45 % of Japan's shipping was devoted to the maintenance of her peace-time economy.

By 1943 (at the time of the Argonaut Conference in which the final operations against Japan were decided), Japan's foreign trade had dropped by 60 %. Her supplies of strategic raw materials had been reduced by half.

By 1944, 84 % of her merchant tonnage had been sunk and Japan could import only 8 % of her petrol requirements. Japan had abandoned the use of sea-lanes, and with it, all that she got from her colonies. Japan's war machinery had come to a grinding halt for lack of oil and raw materials and her population was on the verge of starvation.

American submarines sank 63 % of Japan's merchant tonnage and one-third of her Naval Ships, including seven Aircraft Carriers, one Battleship, ten Cruisers, 30 Destroyers and 25 Japanese Submarines.

* From data compiled by the Washington Naval Statistical Studies and quoted in the book "ATOMIC SUBMARINE" by Clay Blair.

*German Admiral Wenecker in an impartial analysis of Japan's defeat has said, "Japanese over-confidence, underestimation of the enemy, her meagre economic-industrial base were basic causes, after that I would say the reasons for their defeat could be classed in importance: First—attacks by submarines on Shipping, Merchant and Naval; Second—destruction of the Japanese Navy, and Third—air bombing attack."

Table 3

Allied Submarine Successes at Sea*

A/S Effort	No. of German U-Boats Sunk
Surface Ships	247
Shore-based Aircraft	244
Shore-based Aircraft and Ships Co-operation	62
Carrier-borne Aircraft	43
Carrier-borne Aircraft and Ships in co-operations (Hunter-Killer Ops.)	30
Mines	26
Submarines	51
Total	703

Table 3 shows the various anti-submarine (A/S) Forces responsible for destroying German submarines at sea. In addition, a large number of submarines were destroyed in ship-building yards by aerial bombing attacks.

Table 4

MAJOR Battle Units Lost At Sea—During World War II***

Causes	BATTLE UNITS SUNK			
	Battleships	Aircraft Carriers	Cruisers	
Submarines	...	5	15	30
Surface Ships	...	6	5	26
Carrier-Borne Aircraft	...	8	15	23
Rest, including Shore Aircraft/Mines	12		10	60

Battleships, Aircraft Carrier, and Cruisers lost in World War II, and the ships/aircraft responsible for sinking them are shown in tabular form (Table 4). This gives us comparative picture of the damage inflicted by submarines, mines and shore-based aircraft on naval ships.

* "WAR AGAINST JAPAN"—Official History of World War II B.R.

** Quoted from official History of World War II "WAR AT SEA" by S. W. Roskill.

*** Quoted from Studies in U.S. Naval Institute Proceedings, February 1960.

Table 5

Cost Figures of Warships Today

Warship	Cost	Performance	Remarks
Porpoise Class Submarine (1959)	£2,200,000 (Rs. 2 crores & 80 lakhs approx.)	7 days submerged en- durance. 19 Knots submerged. Dives to 700 feet and is silent at 400 feet at 12 Knots.	Primary British A/S ship, will be succeeded by the Destroyer of the Deep, the "Dreadnought" nuclear A/S Submarines.
'Daring' Class Destroyer (1954)	£11,050,000 (Rs. 14 crores approx.)	F P S 3 System for Gunnery. 177 A/S set and Limbo A/S Mortars.	Britain's 2nd-line Destroyer, now growing obsolescent.
'Tiger' Class Cruiser (1959)	£12,800,000 (Rs. 18 crores approx.) Cost of Armament (£3,700,000)	Carries one Tactical Sea-Air Missile.	
'Hermes' Aircraft Carrier (1960)	£18,000,000 (Rs. 30 crores) Cost of Aircraft embarked: £ 10 m. equipment equipment: £1,000,000	British Fleet Carrier.	

THE FUTURE

COMPARISON OF WORLD WAR II BOATS WITH TODAY'S
TRUE SUBMARINES

"The True Submarine (nuclear-powered) is 50 times as effective as the snorkel-fitted submarine which was 16 times as effective as the ordinary Submersibles with which Germany nearly won the War."*

Although all naval craft have improved since the end of the World War II, the progress recorded in the submarines has been remarkable. Whereas the maximum speed of the destroyers, which was 30 knots then, has now gone up to 36 knots, that of the submarine has risen from 9 knots to 40 knots during the same period. Today's submarine proceeds at the 'silent speed' of 30 knots at a depth of 1,200 feet; besides, it is capable of unlimited endurance, with greatly augmented periods during which it can remain submerged without surfacing as also those during which it can be active without any refuelling. At the same time, it is economic; a Porpoise class submarine of 1959 vintage cost about one-sixth of a Tiger class cruiser of the same vintage, not accountise for the cost of armament, and about a ninth of the Head aircraft carrier (1960), without taking into accountise cost of equipping the carrier with aircraft and element equipment. Table 5 sets forth some telling cost of warships today (all figures are quoted from of April 1960, Report on Naval Estimates.)

TABLE 6
Comparative Strength of Submarine Fleets

Country	No of Conventional Submarines.	No. of Nuclear Submarines.
U. S. A.	Over 200	45 Nuclear powered Submarines by 1965
U. S. S. R.	Over 600	Fleet of Nuclear Submarines
CHINA	Over 75	According to the U.S. Intelligence estimates, it would build some by 1964.
U. K.	46	2 Nuclear Anti-Submarine Submarines
SWEDEN	Over 30	- - - - -
FRANCE	Over 20	1 in designing stage.
U. A. R.	Over 27	- - - - -
IRAQ	Over 7	- - - - -
INDONESIA	Over 10	- - - - -
JAPAN	2	- - - - -
TURKEY	Over 6	- - - - -

These figures have been compiled from data appearing in various U.S. Naval Institute proceedings.

—Vice Admiral Rickover, Foremost World Authority on Nuclear propulsion and the father of the Atomic submarine.

A majority of the nuclear-powered submarines have been equipped with intermediate-range missiles like the American Polaris missile.

China is credited with the third largest submarine force in the world, according to U.S. intelligence sources.

Sweden is now building a new type of high-performance A/S submarine force.

Indonesia is presently acquiring about 15 more 'W' Class Submarines from the U.S.S.R.

Japan's first post-war built submarine (2,000 tons) was commissioned in 1959.

NUCLEAR-POWERED WARSHIPS

The prohibitive costs of nuclear-powered cruisers and aircraft-carriers capable of carrying, at present, only conventional missiles and aircraft is a significant factor. There has recently been some talk of equipping cruisers and carriers with the Polaris type of missiles. A surface ship launching base would require the support of large numbers of vessels carrying the defensive elements necessary against air, surface and underwater attack. This supporting element would be economically prohibitive to provide for a number of dispersed missile-launching units, would be impossible to conceal totally from the enemy, and would advertise the presence of the launching ship.

Recently, in a Senate statement, U.S. Defence Secretary McNamara said, "The reason of the cancellation of the Polaris installation was the cost of modifying the "Long Beach" to accommodate eight ready missiles is estimated at 57.7 million dollars or about seven million dollars per missile excluding the original cost of the ship itself and the cost of the missiles. The cost of a new nuclear Polaris Submarine, excluding the cost of the 16 missiles is, 115 million dollars—just slightly more than seven million dollars per missile installation."

Table 7

Nuclear Powered Warships

WARSHIP	COST	REMARKS
Polaris Submarine	115 million dollars	Carries 16 missiles, 7 million dollars per 1,500-mile missile
USS 'George Washington'	Rs. 50 crores (approx)	installation. 'Strategic Weapon'
Cruiser	235 million dollars	Is equipped with tactical missiles only.
USS 'Long Beach'	Rs. 115 crores (approx)	1. Terrier 2. Talos 3. Asroc
Aircraft Carrier USS 'Enterprise'	375 million dollars Rs. 170 crores (approx)	

TABLE 8

Warships Maintenance Costs

Item	One 2,000-ton Submarine.	One Light Fleet Aircraft Carrier.
(a) Pay Packet	7 Officers 70 Men	100 Officers 1200 Men
(b) Fuel Consumption (Standard Index 1)	10	140
(c) Base Facilities	Needs little base support comparatively.	Large base facilities essential.
(d) Protection Screen	Not required.	At least 8 A/S ships-screen.
(e) Annual Maintenance cost (Standard Index 1)	10	150

These figures have been compiled from the following sources:

(a) Notes given at the Royal Naval Engineering College, Greenwich, (b) Admiralty Fleet Orders, and (c) The Dockyard Manual. These serve to give us an idea of the organisation and finances required for operating two types of warships, viz., a small conventional Submarine and a light Fleet Aircraft Carrier.

THE POLARIS SUBMARINE

The Polaris submarine is capable of operating in the Arctic Ocean where and has an operational range of 1,600 miles, which is to be developed to 2,500 miles by 1964.

The Polaris submarine is capable of operating in the Arctic Ocean where no other type of ship can operate. It can shower thermonuclear destruction on any target on the earth, since no point is more than 1,600 miles from the sea.

The Polaris submarine forms the basis of the present Western Defence position, and one quarter of the Defence budget of the U.S.A. is being spent to build these submarines.

ANTI-SUBMARINE WARFARE

The Dreadnought class atomic submarines will form the nucleus of Hunter-Killer A/S Groups in the British Navy. In addition, the U.K. has a very cheap and useful A/S craft, the Porpoise-class submarine.

The U.S.A. has also built a large number of conventional and atomic submarines for purely A/S roles. The A/S submarine has the following advantages over other A/S systems:

- (i) It operates alone, unsupported, in focal points of submarine activity.
- (ii) It operates off enemy coasts and seas where local superiority may not be ours, without support.

- (iii) It comprises the cheapest Anti-Submarine Weapons System.
- (iv) Temperature layers do not affect the A/S Submarine.
- (v) Only the Atomic A/S submarines can operate in the Arctic as an A/S forces against Enemy submarines.
- (vi) Passive Sonar is the answer to today's A/S problem and the A/S Submarine uses it to maximum advantage. In fact, it is widely accepted now that future development in A/S Warfare must be based on the 'Passive Sonar' as fitted in the 'Silent listening devices' in the Hunter Killer submarines.

CONCLUSION

Military history is full of examples where nations have gone to war equipped with weapons and ideas used in the last war. That the concepts of warfare change with the political and economic conditions of the day and the tools of war change with the developments in science must be accepted. Following this our national commanders have continuously to think of the weapons and the methods required to achieve our objectives. This must be done with the minimum waste of manpower and material resources. Today, war embraces all forms of national activity. It particularly affects the economic well-being of a country.

For the sea-ward defence of India and to fulfil our natural responsibilities with regard to the Indian Ocean, the Submarine is an ideal ship. Like the Air Force HF-24 project, it may be feasible to start building submarines in this country.

WORD PORTRAIT OF A MULE

By MICHAEL F. PARRINO

THE history of the mule has been a long one, almost paralleling that of man. No one knows exactly when first appeared. There are references to him in the Bible. Among Mohammedans it is believed that Al Borak, a sacred white mule, bore Allah to Heaven.

The mule is the offspring of the horse and the donkey. He, himself, does not propagate. However, in denying the mule the natural distinction of parenthood, nature has endowed him with outstanding characteristics of each parent.

For example, a court opinion has held, ".....nullius fillius mule does inherit and, therefore, possesses dual but distinctly opposite personalities, representatives of the diverse branches of his ancestral tree, which in the realm of man would make him a veritable Dr Jekyll and Mr Hyde. One of those personalities partakes of the nature of the horse family and the other of the ass. When the bridle is on, and he is otherwise convinced that he is under his master's positive restraint, the quality of the horse family dominates him and he acts with the dependable obedience, gentle mannerism, and judicious qualities characteristic of the horse, commonly known as "horse sense," and he is worthy of a limited degree of trust; but once the bridle is off and he is loosed from restraint and is on his own, the quality of the ass asserts itself, and he displays the vicious attitude and reckless indifference characteristic of the ass, commonly called "jackassery," and those who know him best trust him least; all with the result that, in the former case, he may be expected to act like an ass's horse and in the latter like a horse's ass, for all of which he is indeed both."

Over the centuries thousands and thousands of farms have made use of his labours. He has been used for ploughing, for crushing the wheat, or, for turning the ancient flour mill. Likewise, he was made to carry, for, in the past, it was not uncommon to ride muleback as fitted the occasion.

A familiar sight was the early farmer plodding alongside his mule which was laden with baskets of foods for the market. Today in many parts of the world, particularly in the mountainous regions of Mexico, Chile, Italy, Spain, Iran, Manchuria, and Laos, the only adequate means of travel and of transporting goods and other commodities is still on muleback.

In his meanderings the mule is a sensitive and careful animal. He views obstacles in the road with suspicion. Over rock and stone, through wooded terrain, he picks his sure-footed way, avoiding unnecessary risks and useless steps. Water is about his only fear. His inquisitiveness into the general nature of things is reflected in a personal philosophy that if he is to die he would like to know the reason.

Docile as he may appear he has a temper, as everyone knows. This questionable quality has best been expressed in the judicial opinion of a Kentucky court, "The kicking propensity of the mule is a matter of common knowledge and has been the subject of comment from the earliest time. It is almost as universally recognized as the fact that a duck will swim or a cat will scratch. However, a duck cannot divulge his propensity without water, and ordinarily, a cat will not scratch unless irritated or attacked. But the mule requires no particular setting for the exercise of his high prerogative. He is liable to kick at any time and no one can plead ignorance of this tendency."

THE KABUL INSURRECTION (1841-42)

By Sqn.-Ldr. D. R. SETH

LADY Sale, wife of Major-General Sir Robert Sale who commanded a Brigade during the First Afghan War, accompanied her husband to Afghanistan. And it is good for us that she did. She has left a personal record, in the form of a journal, of the events that took place there. It is a fascinating study, an eye-witness account, full of candid and shrewd judgments, and she gives us a vivid picture of a first-rate fighting force going to the dogs for the lack of a good leader. She writes in a very judicious way, dishing out praise or blame wherever it was due. The journal is thus an important historical document in respect of the First Afghan War.

THE BACKGROUND

The slow but steady southward advance of Imperial Russia towards the frontiers of India was a bugbear to the British rulers of India throughout the 19th century. And their farsightedness does not show to better advantage than in their refusal to see Afghanistan being dominated by Russia. It necessitated the checkmating of all foreign intrigues in Kabul. It also led to war twice when the British felt that the Amir of Afghanistan was turning hostile towards them and more friendly towards Russia, thus endangering the security of India.

In 1838, Lord Auckland, the Governor-General, decided on the invasion of Afghanistan as a means of reducing the ruler Amir Dost Mohammed Khan to a more amenable state of mind and to safeguard British interests in Kabul. A stooge was found in Shah Shuja, the ex-ruler of Afghanistan, to provide a front for the show. It was given out that the expedition was undertaken only to restore a legitimate ruler to his throne.

A vast army was collected at Ferozepur and this force marched through Sind and the Bolan Pass towards Kandhar and Kabul. Luckily, the Afghans were not united and Kandhar was occupied with ease. Some more minor skirmishes followed and Dost Mohammed fled his capital, leaving the country prostrate before the invaders.

THE ARMY IN KABUL

The army reached Kabul on August 6, 1840, and encamped outside the city. On the 7th, Shah Shuja made his public entry and was received in his capital without a show of welcome or enthusiasm.

A grave question now presented itself for consideration and decision. The objects of the British Government had been attained. What was to be done next? Lord Auckland's manifesto had promised that "When once he (Shah Shuja) shall be secure in power, and the independence and integrity of Afghanistan established, the British army will be withdrawn." There were two alternatives open to the British, either to withdraw with the honour and fame of success, hoping Shah Shuja would keep his seat on the throne or to remain in Afghanistan and to govern the country in the name of the Shah.

Macnaughton recommended the second alternative—the worst of the two—to the Governor General. He had permitted himself to be influenced by Shah Shuja, who could not have any peace of mind so long as Dost Mohammed was at large and, therefore, wished the British army to remain. Macnaughton was also infected with a dread of the march of Russian Battalions and the progress of the Czar's influence in Central Asia. Macnaughton thus refused the opportunity or an honourable withdrawal. By doing this, he mortgaged the future.

Macnaughton committed further mistakes. Now that it was decided that the army would remain he did not give much thought to the lodging of the main garrison at Kabul. It was at first decided that the troops will remain in the Bala Hisar, but on objections being raised by Shah Shuja, Macnaughton agreed to the arrangement by which the troops were to evacuate the fort and camp in a most indefensible place overlooked from the surrounding hills. Another mistake, he started raising levies of Khyburees, Kohistanis and Janbaz Corps who, being paid by the Shah, he thought, would be loyal to him. This measure alienated the chiefs without attaching the men to the Shah. The experiment was considered anti-national and chiefs were active from the first to render the service unpopular.

Keene, the C-in-C of the expeditionary force, returned to India via the Khyber; and the Bombay column went back via Ghazni and Quetta to Shikarpur. The garrison at Kabul went into the cantonments. It consisted of two battalions, the British 13th and the 35th Native Infantry, besides three guns of No. 6 Battery.

Afghanistan was divided into two military commands. Cotton had the northern one, which comprised the military occupation of Kabul, Ghazni, Bamian, Jelalabad and the Khyber Pass. Nott had the southern command, which comprised Kandhar, Kalat and Quetta.

For sometime the Shah and Macnaughton flattered themselves with the hope that affairs would settle into order and quiet. But it soon became apparent that repose of Afghanistan was to be of short duration. With the spring came rebellion. There were disturbances in the north as well as in the south. The near approach of Dost Mohammed not only disturbed the Bamian frontier but also kindled the hopes and the activity of the disaffected in the Kohistan and in Kabul. Dost Mohammed's two sons, who had escaped from Ghazni, were at large in Zurmut and the neighbouring districts, seeking the means and opportunity of furthering their father's cause. The general aspect of affairs thus became extremely sombre.

The only good thing was the surrender of Dost Mohammed and his being sent to Ludhiana.

To the external dangers were added internal dissensions. The revenue collectors helped to make the Shah unpopular by their exactions and misdeeds. Macnaughton, knowing it well, was unable to put a stop to it as money was needed to run the Government and to maintain the troops. His half-hearted attempts to reform the administration by punishing the worst offenders produced only a transient result. But it certainly created disaffection among the Durrani chiefs who had so far supported the Shah. The spirit of disaffection to the Shah and hatred for the British gained strength from day to day and began more and more to move the hearts of the people.

A great mistake was made in allowing Sale's Brigade to leave Kabul on

its way to India. It neither reached India as planned nor was it at hand when the hour of decision struck in Kabul.

Another misfortune was the appointment of General Elphinstone as Commander of the army in the northern sector. Elphinstone was a brave gentleman but inexperienced in command, ignorant of Afghanistan and its people, sick in body and at heart.

The evacuation of the Bala Hisar had been a great mistake. But the selection of the site for cantonments was an unhappy one. It was not fortified and had only breastworks. It was commanded and swept by forts in every direction which were neither occupied nor demolished. Still worse, the commissariat stores on which the efficiency and existence of the force depended was lodged in a small fort at distance from the cantonment, the access to which was at the mercy of an unoccupied fort and the walled Shah Bagh on the opposite side of the road. Not only this, the treasury, at the time containing about two lakhs of rupees, was in a house close to that of Burne's, at a distance of half-a-mile from the Bala Hisar and approachable only through narrow streets. The trouble began on November 2. From here onwards, left Lady Sale's Journal tell the tale.

LADY SALE'S JOURNAL

Nov. 2

"This morning, early, all was in commotion in Kabul; the shops were plundered, and the people were all fighting.

"The Shah's guns from the Bala Hisar were constantly firing; the Afghans in the city were doing the same. Captain Stuart (Lady Sale's son-in-law), hearing that the treasury and Captain Burne's house in the city were attacked, went to Gen. Elphinstone who sent him with an important message, first to Brig. Shelton at Siah Sung and afterwards to the King to concert with him measures for the defence of that fortress.

"The King, on hearing of the breaking out of the insurrection sent Campbell's Hindostanee regiment into the city, with some guns, who maintained an arduous conflict for some time against the rebels; but, being wholly unsupported, were obliged eventually to give way when the greater part of them were cut to pieces and several of their guns were captured.

"In the cantonments, all was confusion and indecision. The Envoy mounted his horse and rode to the gateway and then rode back again. Sir William and Lady Macnaughton had vacated the residency before 11 a.m. and came into cantonments, the guns were placed in battery and the walls manned with double sentries. The force at Siah Sung also withdrew.

Nov. 3

"In the evening the rebels appeared in considerable numbers near Mohd Khan's Fort and between that and the Commissariat Fort, situated 300 yards from the cantonments. We have only three days provisions in the cantonments. Should the Commissariat Fort be captured, we shall not only lose all our provisions, but also our communications with the city will be cut off.

"No military steps have been taken to suppress the insurrection, nor even to protect our only means of subsistence (our godowns) in the event of a siege.

The King, Envoy, and General appear perfectly paralysed by this sudden outbreak.

Nov. 4

"The insurgents, in great numbers, took possession of Mahmood Khan's fort and the Shah Bagh. Our guns from the south bastion played on it the whole day.

"Lt. Warren, who held the commissariat fort with fifty men, wrote to the General to say that, unless reinforced, he could not hold out. Reinforcements not reaching in time, Warren and his men evacuated the fort and its contents fell into the hands of the rebels.

Nov. 6

"Today an attack was launched against Mohd Shareef's fort. The storming party was commanded by Major Griffith. A breach was made, the bastion being thrown down and a great part of the curtain. Great numbers of the enemy escaped to the hills behind, which were quickly covered with horse-men, some 2,000 to 3,000. A party of Anderson's horse charged straight up the hill in most gallant style and drove the enemy along the ridge to the extreme left. The enemy were hemmed in, but fresh horsemen came pouring in to their assistance from the back of the hill. They buried our cavalry and Anderson's horse, who, overpowered by numbers and a most galling fire, were forced along the ridge to the spot whence the first charge took place. The cavalry, infantry, guns and all came back again.

"The enemy continued to crown the heights, our guns were out of range and the shot fell short.

"This day Gen. Elphinstone wrote to the Envoy to state that we were in want of ammunition, requesting him to endeavour to make arrangements with the enemy.

"Despatches were sent for reinforcements to Nott at Kandhar. Sale was ordered to return to Kabul.

"There has been constant firing for the last day or two on the city side of the fort and the enemy have made several attempts to carry off the two guns that are lying beneath the walls.

"The Sipahs complain bitterly of the severity of the weather, particularly at night, and some sixty men are in hospital beside the wounded.

Nov. 7

"We are now in circumstances which require a man of energy to cope with them. It is not always in the multitude of counsellors that there is wisdom.

Nov. 8

"The enemy are using our guns against us, throwing shot into cantonments from Mahmood Khan's fort.

"We began to bombard the city in earnest, beginning at eight in the evening and continuing until eleven, firing at intervals of about ten minutes from the 5½-inch mortar and the nine-pounder. The effect was beautiful to us in the cantonments; but it is to be feared that was almost the only effect it had.

Nov. 9

"The enemy showed themselves again on the hills and were permitted to remain unmolested. The Envoy wishes troops to be sent out, but deference was paid to Shelton's opinion who would not attack them being all for a retreat to Hindostan.

Nov. 10

"The enemy are in possession of several forts near us. The Envoy insisted that troops be sent out against them. The Rikabashi fort was attacked and after a great deal of fighting captured. It was decided to occupy it. There is known to be a large store of bhoosa and lucerne there, and we hope also to find grain.

"The events of today must have astonished the enemy after our supineness and shown them that, when we have a mind to do so, we can punish them.

Nov. 11

"Today we have been throwing shells into Mahmood Khan's fort, both from the cantonments and also from the Bala Hisar. We hear that tomorrow night the enemy intend to take the cantonments, and that they have fifteen ladders to escalate with and bags filled with bhoosa to cross by filling up the ditch. Our men are all in high spirits.

Nov. 13

"The enemy showed themselves on their favourite heights (Behmaru). They took two guns with them which they played upon cantonments. It was with great difficulty the Envoy persuaded the General and Brigadier to consent to a force going out and it was late before the troops were ready. It was between four and five p.m. before operations commenced.

"The Afghan cavalry charged furiously down the hill upon our troops in close column. No squares were formed to receive them. All was confusion, my very heart felt as if it leapt to my teeth when I saw the Afghans ride clean through them. The onset was fearful. They looked like a great cluster of bees, but we beat them and drove them back again. There was another stand made at the extreme left; but we were successful on all points, captured both guns and brought one of them in.

Nov. 15

"After a quiet night we have had a quiet day.

"Our camels are dying fast: we see several dragged away daily; and as they are only just thrown without the gate, the air is tainted with their carcasses.

"The site of the cantonments was badly chosen. In addition to there being no water, which of itself rendered the site unfit for a military post, their position was completely surrounded on two sides by the enemy; who, having cut off their supply of water from above, gave the few defenders no rest by night or day. Added to these trying circumstances, the garrison were encumbered with their wives and children.

Nov. 21

"The enemy uncommonly quiet; said to be employed in manufacturing powder and shot, and hammering such of our shot as they pick up to fit their guns.

"At dinner time, Brig. Shelton sent to Mr. Eyre, stating that the Envoy had information that 80,000 foot and 10,000 horse were coming to set fire to our magazine with red-hot balls. How these balls were to be conveyed here is a mystery, as the enemy have no battery to erect furnaces in: but nothing is too ridiculous to be believed; and really any horrible story would be sure to be credited by our panic-struck garrison. It is more than shocking, it is shameful, to hear the way the officers go on croaking before the men: it is sufficient to dispirit them, and prevent their fighting for us.

Nov. 22

"Grand dissensions in military councils. High and very plain language has been this day used by Brig. Shelton to Gen. Elphinstone; and people do not hesitate to say that our chief should be set aside. The poor General's mind is distracted by the diversity of opinions offered; and the great bodily ailments he sustains are only enfeebling the powers of his mind. There is much reprehensible croaking going on; talk of retreat and consequent desertion of our Musulman troops, and the confusion likely to take place consequent thereon. All this makes a bad impression on them.

"Col. Oliver is one of the greatest croakers. On being told by some men of his corps, that a certain quantity of grain had been brought in he replied, "It was needless, for they will never live to eat it."

Nov. 23

"At about two in the morning, in consequence of a resolution arrived at the preceding evening to submit no longer to the insults of the enemy, Brig. Shelton marched out of cantonments with seventeen weak companies. This force ascended the hill immediately above Behmaru, dragging the gun with them with great difficulty and thus up the knoll overhanging the village. From thence they perceived that the village was in the hands of the enemy. A few rounds of grape from the gun made them seek cover in the houses and towers from where they replied to our cannonade and musketry by a sharp and pretty well-sustained fire by jazaills. Both officers and men were most anxious to be led against the village, to take it by storm, but the Brigadier would not hear of it and our men were helplessly exposed to the fire from behind the walls. After sometime attack was ordered. At this time, large bodies of the enemy were descried ascending the hill. Shelton attacked them and the fight continued till 10 O'Clock by which time our killed and wounded became very numerous. At about ten, a party of Ghazis ascended the hill. The battle became hot. The officers encouraged the men to advance but nothing would do, our men would not advance.

"So the enemy rushed on: drove our men before them very like a flock of sheep with a wolf at their heels. They captured our gun. It was an anxious sight and made our hearts beat. The men ran till they had gained the second square which had not broken, and there finding a stand, turned about, gave a shout and then the Ghazis were in their turn panick-struck and fled. The gun was recovered.

"At about half-past twelve, just as we had finished our breakfast, the enemy gradually came up the hill and their fire was so severe that our men in the square could scarcely fill up the gaps as their comrades fell and our whole force both in horse and foot were driven down the hill and our gun captured."

The British force was saved because the Afghan leader suddenly stopped the pursuit and led his men back.

Nov. 24

"A person has come from Osman Khan offering us terms. They propose that we leave the country, giving hostages that we will send the Dost back to them. They say they do not wish to harm us, if we will only go away, but that go we must.

Nov. 25

"There was a long and unnecessary conference with the ambassador. Their demands were sufficiently exorbitant and the terms they offered could not be accepted, even by persons in our condition. They require that Shah Shuja be given up to them with his family; demand all our guns and ammunition. The Envoy sent a chivalrous reply, that death was preferable to dishonour.

Dec. 2

"The enemy's confederacy is said to be breaking up. They are now quarrelling regarding the partition of power which as yet they have not. One says he will be chief of Kabul, another, of Jalalabad, etc.

Dec. 4

"The enemy assembled in numbers on the heights, and planted two guns in the gorge from which they discharged 144 shots at us. Just as it was getting dark the fight commenced in earnest. The enemy made a rush at the captured fort. They were received with a sharp fire which was kept up for a long time. Notwithstanding that, the enemy opened five guns on us. Our loss was very trifling, few horses and camels were killed.

Dec. 6

"General Elphinstone wrote again to the Envoy today, urging him to treat for terms with the enemy.

Dec. 9

"Capt. Trevor was sent by Sir William to meet several Ghilzai chiefs who had volunteered to enter into terms with him on payment of two lacs of rupees, which sum was taken by Trevor that night. But only one person met him, who said that the others had seceded from the engagement and they would not receive the money.

Dec. 11

"As we have only two days provisions left, the enemy's terms have been accepted. As far as I can learn, four political hostages are to be given to ensure the return of the Dost.

Dec. 13

"A curious scene occurred today. The men are to leave their old muskets and take fresh ones out of the magazines. Without any order or arrangement the Europeans, sipahis and camp followers all got into the midst of the stores and helped themselves to whatever came in their way; it was a regular scene of plunder.

Dec. 16

"The impudence of these Afghans is very great. Yesterday some men who were looting our people close to the gates were warned off, and they replied that we might keep within our walls; all without belonged to them.

"They know that we are starving; that our horses and cattle have neither grain, bhoosa nor grass. They have pretty well eaten up the bark of the trees and the tender branches; the horses gnaw the tent pegs. I was gravely told that the artillery horses had eaten the trunnion of a gun. This is difficult of belief; but I have seen my own riding horse gnaw voraciously at a cart-wheel. Nothing is satisfied with food except the pariah dogs, who are gorged with eating dead camels and horses.

"This evening the Rikabshahi fort, Zulfa Khan's fort and the Magazine fort were given up to the chiefs.

Dec. 20

"The Envoy had a meeting with the allies this evening. He says they are fearful that we will break the treaty. So they rise daily in their demands; and today required that we should send the guns and ammunition that were to be left at once into Mahmood Khan's fort.

Dec. 23

"About two o'clock we suddenly heard firing and all went to the rear gate to see what the matter was. I met Mr. Waller who informed me that the Envoy had been taken away by the chiefs.

"The clearest account we have yet obtained was from Le Geyt who accompanied the Envoy. He reported that on the Envoy's arrival at the place of the meeting he found the chiefs seated on a lungi on the ground; that he sat there with them and discussed whilst Trevor, Mackenzie and Lawrence remained on their horses; that after a time two sirdars came and stood behind the Envoy who rose as did Akbar Khan. He seized the Envoy by the left wrist and Sultan Khan held him by the right. They dragged him down the bank. At the time he was laid hands on Mackenzie, Trevor and Lawrence were disarmed and forced to ride behind different chiefs. They saw no more of the Envoy alive.

"The only person supposed to know the object of the Envoy's going out was Skinner who, with Sultan Khan, had come to see him on the night of the 22nd with a letter from Akbar Khan. In that letter, which was read by a friend of mine, Akbar Khan proposed that he should be made wazir to Shah Shuja; he was to receive thirty lacs of rupees down and four lacs per annum; our troops to remain eight months and then only to go if the King wished them to do so. He urgently requested the Envoy to come and talk it over with him.

Dec. 26

"The city is in great excitement, the Afghans fearing that we shall not make the treaty good and force our way down.

Dec. 27

"The council—Elphinstone, Shelton, Anquetil, Chambers and Pottinger—have ratified the treaty. No one but themselves exactly knows what this same treaty is; further than that, it is most disgraceful. Fourteen and a half lacs to be given for our safe conduct to Peshawar; all our guns to be given up, save six; and six hostages to be given on our part.

Dec. 28

"Our guns are brought down to the gate to be ready for the Afghans to carry off tomorrow.

"Our sick sent to the city.

Dec. 30

"More of our guns were sent to the chiefs who now dictate to us, delaying our departure which is to be postponed according to their pleasure.

Dec. 31

"Negotiations are going on still—there seem to be some hints regarding Shah Shuja's abdication. Thus ends the year.

Thursday, 6th January, 1842

"We marched from Kabul."

(To be continued)

BOOK REVIEWS

The Economics of Defence in the Nuclear Age by Charles J. Hitch & Roland N. McKean. A Rand Corporation Research Study. (Harvard University Press, Cambridge, 1960). 422 pages. Price \$9.50.

This book presents an approach to the analysis of military problems. The authors, quite justifiably, regard all military problems in one of their aspects as economic problems of efficient allocation and utilisation of resources. The treatment of the book is based not so much on substantive solutions of many of the military-economic problems as on an objective analysis of general methods of approach at solving these problems. Due emphasis is given to the impact of nuclear technology on military problems.

The authors have brought out very forcibly the basic concepts of economics in defence: maximising the attainment of the objective with the given resources or minimising the cost of achievement of a given objective. These result in the achievement of highest efficiency with the greatest economy. They have correctly pointed out that National Security, from the economic point of view, depends on the quantity of national resources, the proportion of these resources allocated to defence and the efficiency with which these resources are used. With this as the basis, the whole book is designed to help the decision-makers, their advisers and interested citizens by showing how economic analysis can contribute to efficient and economical policies and actions.

Part I of the book, pertaining to the resources available for defence, deals with the overall national resources and their intelligent allocation for purposes of defence. This has been discussed in a very realistic manner in the context of the nuclear age and the relative economic strengths of the major powers. Part II, which deals with efficiency in using defence resources, is of special interest not merely to military decision-makers but also to economists, mathematicians, operation researchers, work-study practitioners and people interested in general management. The problem associated with the economics of defence and the methods of achieving maximum effectiveness in terms of resources have been treated in a simple and convincing manner. The chapter on "An Illustrative Application of Economic Analysis" has been presented in a very lucid way, without demanding a high mathematical background of the reader. Part III deals with special problems and applications. The chapter on "Military Research and Development" is as revealing as it is profound. The authors have taken great pains to point out some of the common pitfalls in the conduct of military research and development, which are applicable to almost all countries. The appendix on the Simple Mathematics of Maximisation will be of considerable interest to readers interested in a mathematical presentation of the assessment of efficiency in the utilisation of defence resources.

This book presents a very refreshing approach to the economic aspects of national defence and should prove to be of abiding interest not merely to the operations research personnel but also to the military decision-makers. In the context of the present national emergency, this book is highly valuable reading matter for all people concerned with national defence policy.

B.D.K.

On Thermonuclear War by Herman Kahn. (Oxford University Press, London, 1960) 651 pages. Price 55 sh.

In his treatise on 'Thermonuclear War' Herman Kahn deals with the various problems arising out of the nuclear weapons, ICBMs and other modern wea-

pons systems. In an incisive but analytical approach made in an objective manner, the problems of defence posed before the two nuclear powers and indirectly having a bearing on the other countries of the world, have been critically evaluated, explained and suggested upon by the author. For obvious reasons, the treatise does not cover aspects related to an appraisal of the technology or efficacy of specific weapons systems but deals with issues related to different types of strategic postures, that a nuclear power has to adopt, both for 'Attack' and for 'Defence'. The different alternative postures available to USA today are exemplified, with emphasis on the need for such an analytical approach to modern military problems by systems analysis. The risks involved in modern warfare in the nuclear era i.e., in the event of a war of an unlimited type where the attack, defence and rehabilitation is carried out in an unplanned and unforeseen manner, have been illustrated with quantitative background, without any bias or prejudice. Particularly the use of nuclear weapons and the effect of nuclear detonation (including genetic effects, long range and short range effects, etc.) the problems of attack and the strategy for defence, the protection for military bases, modern cities and the 'other part of the country', the questions of 'profit and loss account' of a war on a deliberate appraisal, are some of the topics in the lectures of the learned author. His emphasis on 'Deterrence Postures' followed by his suggestions for an adequate civil defence programme, form the central theme of the book.

However, the under-current of the whole thesis is on a fear complex—the fear of an 'enemy' attempting to destroy by virtue of a superior weapons system, the fear of after effect of the nuclear explosions, the fear of the aftermath of the modern wars with their potential large scale destructive prowess—which is evident to any one in a country outside the nuclear power zone! The author has to be given the credit for being objective in his method of approach; there is no discernible propaganda element focussed at the under-developed areas of the world nor any attempt at war mongering and mudslinging at the 'other side'. In fact, the way of reasoning is sometimes brutal to the pacifist and the 'God-fearing' but the style is rather involved and not lucid except in a few chapters like 'Real Past', Hypothetical Past and problems of the present and future. The chapter on 'Role of Analysis' is interesting reading in the context of R. & D. expenditure vis-a-vis Defence spending and Budget. The complexities of development, the need for coordination, the uncertainties of guided research, etc., are brought out vividly.

Read as a whole the book presents a gruesome picture of the thermonuclear war. For a citizen of USA the book gives a clear picture of what one can expect in the event of war with the USSR and at the same time, the necessity for the present Government to look to the proper build-up necessary for absolute preparedness for war. Cold reason and logic which seem to motivate the author have cleft all the humaneness from him. The ideas of the author tend towards those of a megalomaniac and advocate warmindedness to an average citizen. The finale is in the suggestion of USA and USSR joining together to determine the destinies of man. One feels whether man is the beast after all, as depicted after reading the book.

V.R.

Nuclear Energy Simplified by John Ernest Radford. (Macdonald, London, 1961). 141 pages. Price 28 sh.

The book is an elementary one written for the benefit of an average scientist who is interested in the new field of the uses of atomic energy and for the layman who has curiosity to study on the latest field of scientific discovery. The author has neatly arranged the introduction of the concepts of atomic

model, the fission and fusion processes and the release of energy as a theoretical basis from the atomic nucleus. In some cases, however, the author has gone abrupt in introducing terms. The average scientist or the layman will have difficulty in understanding these terms. For example, the 'Critical size' concept for the atomic bomb or the pile does not give a clear picture to a casual reader. The chapters on the atomic power plants are quite interesting and give a concise and precise picture of the nature of stupendous research carried out. While the reader gets a glimpse of the various materials required and the engineering technique involved, he goes with a feeling that the author could have given more on the preparation of materials, such as uranium metal from the ore, preparation of heavy water, etc. The book is, however, useful as an elementary treatise.

V.R.

The Art of War by C. Falls (Oxford University Press, London, 1961). 240 pages. Price 8 sh. 6d.

Professor Falls is well-known for his lucid exposition of the theory and practice of war and has made valuable contribution in the understanding of military matters in the English speaking world.

In the volume under review he has put over, not a potted military history from the days of the Napoleon to the present times, but an analysis of the manner in which wars have been fought, and hazards a guess as to how they are likely to be fought in the future. As has been clearly brought out, war is something which has been with mankind from the very beginning, and if its study does not turn its student into a fire-eating militarist, ever ready to conquer territories new, the neglect of its study definitely leaves a gap in the general education of those, who through the exercise of their franchise are in the ultimate analysis the masters of their countries' destiny.

Wars, in the main, have been fought for certain reasons—"an extension of diplomacy by other means." The last few chapters dealing with total war, Air and Naval forces and Nuclear War analyse this aspect in its modern setting, and discuss the concept of what is now called 'escalation', whereby countries might, for good reasons, refrain from using all the resources at their disposal in the wars they might wage. The example of the Korean war is discussed in detail. Similarly, considers the author, nuclear weapons might not be used and large scale conventional forces maintained by potential aggressors are cited as possible safeguards against the use of these "ultimate" weapons.

To the military reader, the author's plea for the use of surprise and deception at all stages is of value. As he puts it 'let it be borne in mind that the orthodox is what the enemy almost always expects. . . The most daring and even imprudent manoeuvre has a good chance of success when the enemy is wondering what is happening. . .

"Deceive, mislead, confuse: this is the best recipe for success. All very well for the theorist to talk, the practical soldier may say, but the thing is not as easy to do as it looks on paper and the atmosphere of the battlefield has no resemblance to that of the study. He is justified in the retort. Unless the theorist himself has not only experienced war but seen with his own eyes the commander's often agonizing struggle to preserve control, to maintain movement, to repair mistakes and accidents, to make the dawdler remember the value of time, and above all to face within his own breast the sickening shock of the report of some local failure, perhaps involving in bloody loss of troops whom he has intimately known and loved—unless the theorist can encompass all this and more, his

ideas may be useful but the demands on leadership will elude him. It is the will to do what has to be done. This book is entitled 'The Art of War' and ends with no intention on the part of its compiler of retreating from the implication of the name. It is, however, an art the pursuit of which is obstructed by constant collisions and frictions, moral, mental, and physical, such as no other activity described as an art experiences. The art of war,' said Napoleon at St. Helena, "is a simple art; everything is in the performance."

This indeed is the time for widening of the study of the art of war—not only by the soldier but also by the civilian, and this is an easy primer to start with.

A.M.S.

Men in Uniform—Military Manpower in Modern Industrial Society by M. R. D. Foot (Weidenfeld and Nicholson, London, 1961). 161 pages. Price 21 sh.

This is the third book published on behalf of the British Institute of Strategic Studies, and is obviously written for the thinking public of the West. It discusses with polish and urbanity why the Western nations will probably need to keep more men under arms in the Sixties than they did in the Fifties, and discusses the possible recruiting systems which exist in some of the typical current forms; universal service, selective service, voluntary forces, citizen armies, and various mixtures of these systems. These problems are posed and discussed against a brilliantly exposed civil and military background facing the West, and the countries considered in detail. In spite of this obvious slant, this book has much to offer the service reader in India, because we too are facing some of the problems discussed; at least in part, and especially those pertaining to the recruitment of the technicians without whom no modern army can exist.

The author maintains that although weapons available since 1954 have altered little, thinking about them has altered a lot. "Many people far too knowledgeable in politics and war to accept the simple pacifist slogan 'better red than dead', have doubts about the wisdom of relying wholly on the nuclear deterrent to communism." Further, the author points out that the normally accepted three weeks required for mobilisation can hardly count for much when a country like the U.K. can expect a mere four minutes notice for annihilation. The author continues, "the visible armed might of the communist powers is so extensive that it is bound to cause alarm. . . The Chinese are talking indeed of constructing an armed militia which will eventually muster two hundred million strong—as many soldiers as all the males in the Atlantic Alliance. . . The Chinese militia may only be a paper dragon—certainly, it is not breathing fire yet, and when it does, it may well be the Russians who get burnt; but those five and a half million armed, drilled, disciplined, organised, communist dominated soldiers, sailors, airmen, and spacemen are real. There are over 200 divisions of soldiers alone—110 Chinese and whatever are left of the 135 with which the Russians started 1960".

Discussing the civil background against which troops have to be found, the author recalls that the large pools of unemployment formerly found in the West have dried up, and yet, the dangers confronting almost the whole world is such that "in a world run by the powerful, one needs at least a little power if one is to have any say in how it is run." These facts are further complicated by the premise on which the Western way of life hinges, that compulsion is evil. The author points out "The truth may be that the Western lands have started to go soft: the peoples' attitude to warfare, and indeed to struggle of

all kinds, is becoming one of 'better to float down-stream than battle against the current', as the original cut-and-thrust of a free enterprise system is muffled by welfare paddling". Modern weapons, goes on the author to suggest, have so changed the military problem that "the time has come to stand Clausewitz's celebrated dictum on its head, and declare that diplomacy has now become the continuation of warfare by other means. The objects . . . sought by war, can hardly be attained by war any longer; they must be sought through political and economic, and not military channels." However, suggests the author, "if they (weapons of mutual destruction) are not used, but the struggle for power continues as presumably it will, then armies, navies, and air forces are likely to play a decisive part in it in such critical fringe areas as Cuba, Katanga, Oman, and Quemoy, what part they are able to play will depend upon their composition and training."

The detailed examination of the various system are replete with a mass of interesting detail put over in a delectable manner, but suffices for us to mention the three major points made by the author in his conclusion. These are that it is vital in manpower planning to keep the political aim in view the whole time: that it is vital from the services' point of view to convince people as they approach military age that armed service is something worth doing: and finally that it might be worth the while of manpower planners to consider whether they could usefully widen the whole horizon of service by taking it as regular routine work that can engage plenty of enthusiasm among young people, e.g., flood relief and tasks to clean up some of the mess old wars have made.

In spite of the somewhat formidable title, this book is easy reading, and besides its chief subject matter—recruitment, gives a lucid survey of the major strategical and political thinking of the times.

A.M.S.

Hitler Confronts England by Walter Ansel, (Duke University Press, Durham (USA), 1960). 348 pages. Price \$7.50.

Rear Admiral Walter Ansel, U.S.N. (Ret) has produced a detailed study of the projected German invasion of England in 1940 based on the official German records perused as a Forrestal Fellow of the U.S. Naval Academy, and followed up with painstaking research in Germany and England. The Admiral had been greatly interested in the techniques of Amphibious Operations, and had taken part in its evolution and teaching during his service career. It is therefore natural that he follows the situation "on the other side of the hill" with great interest. Besides coming to the conclusion that ultimately, many of the thought processes there finally came out with answers similar to those evolved by the Allies, he came across some other indications, and these he follows to the full in his thesis under review. In a nutshell, as he puts it, "More than any other single factor, Adolf Hitler rendered invasion impossible".

The author takes pains to paint for us the picture as it appeared to the actual participants in 1940, the period of Dunkirk, the Fall of France, the Battle of Britain, and last but not the least, Operation Sea Lion, the projected invasion of England. He also takes pains to explain the set up in the German forces, of command and control, of the inter-service jealousies, and above all the peculiar situation in which the chief participants found themselves as a result of the part that Hitler played in the shaping of, and running the day to day machinery which was to take the third Reich, to the Germania dreamt

of by its Fuhrer. He also explains in detail the mechanism, if it can be so called, by which Hitler came to his decisions, and takes us through almost the whole of Hitler's personal history up to the time.

In his final Assessment of the Situation, the author has some pertinent points to make, which are of interest to us. He says "Our investigation suggests that knowledge of the inner compulsions of men in authority can light the way of events." He goes on to add that: "Reflection on the urges that incite leaders, thrusts us into the realm of policy and the relation of policy to its helpmate, strategy. It was in policy that Hitler's intent expressed itself, and to the confusion of strategy. . . It is doubtless true that at the root of Hitler's failure lay the grandiose policy his spirit required him to adopt. But a mentality that could generate a policy so ambitious was bound by the same token to go astray in whatever strategy, political or military, it invoked to make the policy come true. . . Many personal Hitlerian characteristics militated against sound military strategy, and in the forefront was a cocksure confidence in his own ability to achieve political effects without fulfilling strategical demands, or even thinking them through. His main weapon was psychological pressure, and of all examples, "Sea Lion" furnished the most convincing one." To the military reader what would be even of greater interest is the fact that even the professional and competent German servicemen should have been so taken in, split up and over-ridden by this man, and the manner in which he set about achieving this.

A.M.S.

1918: The Last Act by Barrie Pitt (Cassell, London, 1962). 318 pages. Price, 30 sh.

...

This is one of the finest accounts of the last dramatic year of the First World War. It opens with a vivid description of the stalemate that had been reached in the fighting on the Western Front by 1917, and the appalling conditions of life in the trenches. One cannot do better than quote a paragraph or two on the subject:—

"The stench, therefore, for most of the time was nauseating and inescapable. Stagnant mud, rotting half-buried bodies, stale human sweat and excrement, the pervading reek of chloride of lime, all these have haunted, for the remainder of their days, the memories of the men who occupied the trenches; and a malicious practice, common to both sides, was to lob occasional mortar bombs into enemy latrines with depressing effect. Often the lingering, sinister odour of phosgene or mustard gas condemned the soldiers to the sweating discomfort of rudimentary gas-masks for hours on end, while cordite and lyddite fumes were so much a part of the day-to-day existence as to be virtually unnoticeable; only the fragrance of burning wood, bubbling Maconachie stew (meat and veg.) or frying bacon relieved occasionally the mephitic misery." (p. 13).

"Draped on the wire belts were the bodies of the men killed during these white, nerve-racked, back-breaking nights. Some were killed by rifle-bullets as they crawled over the ground carrying coils of wire, some caught by scything machine-gun fire as they stood to fix the wire, some bombed by prowling patrols as they worked, hearing above their own exertions only the last few footfalls of the oncoming enemy, or the soft thud of the grenade as it landed at their feet. The entire trench system from the Channel to the Swiss frontier was dug, fortified and held by pain and death." (p. 14).

This is followed by a revealing chapter describing life "At Home". With shortages of everything, rationing, daylong queues, hunger & starvation stalking Europe, and the never-ending news of casualties & deaths received in every home, there is no wonder that by the beginning of 1918 Europe was literally sick of war and slaughter. There was hardly a family in Britain which still numbered all its sons among the living. Still the people of all the warring nations went on with the war, for they had no other choice, but "they hated it, hated the colourless existence it had brought, hated the hunger, the cold, the loneliness".

If it is correct to say that the mark of superior generalship is to achieve military success with the greatest possible skill and the least possible casualties, then one is forced to say that the commanders on the Western Front showed very poor generalship indeed. In almost all the well-known battles of this war the battering-ram tactics were employed with the only result that could be expected: an unusually large number of men killed and wounded. There was a slight modification of such tactics towards the end of the war, as in the Allied advance in August 1918, but, on the whole, surprise and other subtleties of strategy were scorned and reliance was placed on pure and unadulterated frontal attack and the weight of numbers. No wonder the loss of manpower was great. And if statistics are any indication, one crore men of all nations killed (mostly on the Western Front) is a staggering figure. This however does not include those (about 63 lakhs) who were "sufficiently seriously wounded for their subsequent lives to be marred by suffering".

Barrie Pitt not only gives a graphic account of all the battles of 1918 on the Western Front, and dispassionately accurate pen portraits of the men who organised or led the huge armies on both sides, their bunglings and jealousies and manoeuvring for positions of power, but also gives an idea of the incalculable damage to mankind in the shape of heartbreak, misery and suffering caused by the "Ugly burgeoning of national ambition and military pride." Captain Liddell Hart's view of this study viz., that it is "one of the best of all the recent books on World War I" is thus amply justified.

In addition, the book has numerous illustrations, maps, a bibliography and an index. A very readable and useful work indeed, written with clarity and vigour.

P.N.K.

The Strangest War: The Story of Maori Wars, 1860-72 By Edgar Holt (Putnam, London, 1962). 280 pages. Price 30 sh.

The Maoris are the original inhabitants of New Zealand, first discovered by the Dutch seaman Tasman in the 17th Century. Later, the English seaman Cook visited the islands several times in the 18th Century and even declared them annexed to the British Crown. The British Government however disavowed the act. Gradually men of several nations started coming in search of flax and timber and some even settled there. When the English missionaries first came in 1814, they found the Maori tribes constantly fighting among themselves. The author of the book under review, Mr. Holt, mentions a case when two Maori girls bathing together quarrelled over the affections of a white whaler Captain and so started a fierce and bloody tribal war, known in Maori history as the 'Girls' War'. These internecine wars became still more murderous after the introduction of the musket and some other weapons into the country by one of their own chiefs, named Hongi, who brought these things to the country from his tour of England and other countries. The musket was however not the only thing introduced from the west—

prostitution, drink and venereal diseases were some of the other evils of civilisation made known to the Maoris by casual visitors and settlers. The earlier chapters of Mr. Holt's book shed some light on these aspects.

By 1840 when the British Government sent Hobson as Governor, the missionaries had made some headway and there was some sort of peace among the Maoris themselves and between the Maoris and the whites. Later, in the period to which this book primarily relates, fighting again flared up and lasted for several years. Hau-hau, a new body of Maori champions, had emerged as an important factor in the conflict between the whites and the natives and its activities were bound to lead to a clash. The hauhau cult had a curious body of beliefs which was a mixture of Christianity, Islam and Maori religion. The movement spread rapidly, its main plank being anti-whiteism, if one may coin that word, and its fanatical followers believed that they could ward off the enemy bullets by raising their palms and shouting hau-hau and certain other incantations. Bullets, however, seldom behaved so obligingly, as Mr. Holt puts it; but there is no doubt the new faith gave the Maoris courage to face the white man's bullets unflinchingly. The contest was nevertheless very uneven. The Maoris were disunited (many were supporting the whites), they were untrained and not as well armed as the settlers. They were brave fighters and the storming of their stockades often proved costly to the whites. But courage and bravery alone are not sufficient in warfare. Though they were the original inhabitants of the country, they were gradually out-numbered by the white colonists, especially after the discovery of gold in 1861 and the consequent gold-rush which brought thousands of whites to the land. There could only be one result of this uneven contest...the Maoris were finally defeated and all fighting came to an end in 1871-72. This strange war was characterised by ambushes and raids, though there were some bigger engagements and actions too, which, though unknown outside, are famous in New Zealand. After the fighting was over, the natives were granted representation in the legislature and so thorough was their pacification that it is a matter of gratification for all concerned that the twentieth century saw this young colony of two races make rapid progress as a member of the Commonwealth. The Maoris are not only living in perfect harmony with the whites, but students of military history can recall the fact that the Maoris (now thoroughly civilised) contributed a Pioneer Battalion in the Great War of 1914-18 and an infantry battalion of fully combatant troops in the Second World War which fought creditably in Italy. (This last fact is not mentioned by Mr. Holt, presumably because it was beyond the scope of his book).

Mr. Holt has achieved remarkable success in describing the whole series of Maori wars in a single volume and his account, written with journalistic flair, makes very easy and interesting reading. The description of social and political background of the conflict and the portrayal of the chief characters of the drama is very realistic and sympathetic. There are some well-chosen illustrations, a bibliography and an index.

P.N.K.

The Rajputana Rifles: A History of the Regiment, 1775-1957 by Major M. G. Abhyankar (Orient Longmans, Bombay, 1961). 468 pages.

This is a complete history of one of the famous regiments of the Indian Army, and gives in one volume the story of each battalion separately. This must have meant very considerable and painstaking labour in collecting and

collating all the facts and in linking them into a connected, readable story. The story in each of the three parts is narrated with the help of maps and sketches of which there are as many as 53. There are also about two dozen well reproduced illustrations, mostly of individuals connected with the Regiment at different times, including a delightful one (in colours) of Col. Arthur Wellesley (later Duke of Wellington) whose name was borne by the first, and therefore the seniormost, battalion of the Regiment. Quite in keeping with the accepted tradition of Regimental histories, the book contains some very useful appendices giving details of Battle Honours, Awards, Citations etc. won by the battalions of the Regiment—formidable lists which are a clear annals of India's military history. Major Abhyankar deserves congratulations and thanks of all concerned for placing on record the proud achievements of the Raj. Rif.

The present reviewer, however, cannot help pointing out some mistakes which he feels could have been avoided if a little more care had been exercised in checking up the manuscript with some good history book, an atlas and a gazetteer. A few examples are given below, not with a view to running down the author, but purely in a spirit of co-operation and in the interests of improving the standard of such books by Indian authors, and of this book too, when it runs into the second edition.

- (1) On p.62, the First Afghan War is stated to have broken out in 1838. This is not so, as the war broke out in 1839, though, no doubt, Lord Auckland started his preparations in 1838.
- (2) The picture of the Battle of Meeanee facing page 63 gives the date of that battle as 23rd March 1843 (which is the date for the battle of Dabo). The correct date for Meeanee is 17th February.
- (3) Multan was stormed in January 1849 and not in 1848 as stated on page 20. This is also clear from the account of the event given on page 21.
- (4) On p.295, the loop of the Irrawaddy is stated to run 'eastwards' between Mandalay and Pakokku. This should be 'westwards'.
- (5) On p.54, Pakokku in the map is spelled correctly, while on the same page in the text it has a different spelling.
- (6) The name of the village Sittaung is spelled in two different ways on the same page (p. 295, lines 10 & 15).
- (7) In the map on p.64, Hyderabad is shown on the west bank of the Indus instead of on the east.

The proof reading seems also to have been perfunctory. Here are a few examples:—

- (1) p. ix, line 3, ingradient (ingredients).
- (2) p. 243, line 7 from below, reaf (reef).
- (3) p. 244, line 1, Gederef (Gedaref in map on p. 242).
- (4) p. 242, line 7 from below, Abyssinia (Abyssinia).
- (5) p. 432, lines 10 & 14 from below, Jawaras; p. 467, line 31, Jowaras (which is correct?)

It is hoped that the second edition, whenever that may be, will be thoroughly revised, particularly in respect of dates and spellings.

Sea Power: A Naval History by E. B. Potter, and Chester W. Nimitz; Ed. (Prentice-Hall, New Jersey, 1960). 932 pages. Price \$13.35.

Sea Power is a comprehensive naval history. A complete panorama—from earliest days of galley warfare to the latest development of super carriers and nuclear submarine—is presented in this voluminous book.

The evolution of sea power through the centuries in all its manifold aspects has been described in a logical and natural manner. It is fascinating to study how the fall of Greek sea power was followed by the rise of Roman supremacy at sea; how the English through fifteenth and sixteenth century by clever political manoeuvres, by strategic base policy and by superior seamanship and tactics became the world's foremost sea power. It was her supremacy at sea that made Great Britain the greatest imperialist power that she was till the beginning of the Second World War.

Then onwards began the ascendancy of the American sea power which had started as a nucleus force ten years after the American War of Independence. It found its feet during the Civil War. The Union Government fully exploited the navy which proved very effective in blockading the confederate ports and in providing logistics and flank support to the Union army. Immediately afterwards due to pre-occupations of the people with internal problems the U.S. navy deteriorated to an insignificant force. A combination of various external factors, no less, the strong financial condition of the country heralded the rebirth of the U.S. navy in the later half of the 19th century. Mahan's advocacy of sea power also played a significant role in this development.

During the same period the world witnessed a number of revolutionary changes in ship-building, ship propulsion and in the design of naval ships with consequent changes in the concept of naval tactics. Wooden hulls were replaced by the heavy iron clads, sail gave way to steam, bigger and better guns were manufactured. The first prototype of submarines was produced. Technical progress in guns, armour, engines, and hull design continued unabated during the first two decades of the 20th century.

The book describes in great detail all naval actions of the two World Wars and the continuous evolution of new fleet doctrines. One reads how each naval action had something to contribute to the formulation of naval tactics. How a major naval battle culminated a particular era of the growth of sea power—as LEPANTO was the culmination of the age of the Galley; TRAFALGAR of the age of sail and JUTLAND of the age of steam.

SEA POWER develops six main themes:

- (i) the influence of the power upon history;
- (ii) the reasoning behind strategic decisions;
- (iii) the characteristics of successful leadership;
- (iv) the evolution of naval weapons;
- (v) the evolution of naval tactics; and
- (vi) the evolution of amphibious doctrine.

Within these categories, emphasis is placed on the problems posed in each period of history by new weapons and new conditions, and on the solutions worked out for each by the navies of the world.

This comprehensive work will go a long way in meeting the needs of the students of naval history in particular and the reading public in general. Close

association of Fleet Admiral Chester W Nimitz USN with the project gives the book an air of authority. The military analysis and naval concepts expounded in the book bears the imprint of expert professional knowledge. The book is a must for any Library.

R.B.M.

A History of Soviet Air Power by Robert A. Kilmark. (Faber & Faber, London, 1962). 359 pages. Price 42 sh.

Many books have been written during the last few years on Soviet Air Power. Most of them are very interesting and informative, but none puts Soviet Air Power in a historical setting in the way this book does.

The author traces the history of Soviet Air Power from before the first World War to the present times. He throws a flood of new light on the Soviet use of air power in foreign wars; the application of air power as a political instrument; the assistance given to the Soviet by the U.S.A. and Germany; the build up of the air forces after the Second World War; its future capabilities and its relative strength as compared with other countries.

Aviation in Russia started at about the same time as in other countries of Europe and America. But when the First World War started, the Russian Air Force was comparatively very weak and did not play any significant role in the fighting.

The Soviet regime, soon after setting itself formulated the N.E.P. or New Economic Policy. This was aimed at strengthening the foundations of the state and thus made possible great improvements in the operational capabilities of the Air Force. The Air Force actually received the highest priority in the allocation of funds, men and material. The aviation industry and research, development and training programme rapidly expanded. In these programmes help was sought and given by Germany and the U.S.A. Russia began to catch up on more advanced countries.

When the Second World War started, Soviet Air Power was still weaker than that of Germany and Japan. It was mainly due to shortages in equipment and training. The German invasion of the Soviet Union in 1941 was the greatest test in its history not only of the capabilities of the Russian Air Force, but also of its doctrine of combined-arms warfare. Although overwhelmed during the early months of the invasion, the air force survived to be reorganised, re-equipped and trained for renewed operations as the fighting continued.

Then came the Atomic and Missile Age. The strategic situation of Russia had completely changed. Germany and Japan were in ruins. Britain and France were weakened. Only the United States remained her equal. With this shift in power relationship came technological changes, the atomic bomb and the Hydrogen bomb bringing with them an unprecedented enlargement of the dimensions and significance of air warfare. The Soviet Union, therefore, began to devote more of its money and energy on obtaining qualitative supremacy in the air with new weapons and forces. Frantic efforts were made to provide the forces with the means of waging intercontinental nuclear war in the age of strategic air power. New types of aircraft, guided missiles and developments in technology helped in making the Russian Air Force one of the two greatest in the world today.

This is the story this book tells. It is a success story. It inspire both hope and fear.

D.R.S.

Communist Revolutionary Warfare: The Vietnam in Indo-China by George K. Tanham, (Praeger, New York, 1962). 166 pages. Price \$5.

Recently English translations of two very important books on Guerrilla Warfare, by two masters of the art, have been published. The one is by Mao Tse-Tung and the other by Che Guevara the Cuban revolutionary leader. These books have deservedly attracted much attention in Europe and America, as they are considered the Bible of Communist revolutionaries the world over. These books give us an insight into the minds of two original military thinkers. These are two signposts to the war in the future.

Another book which unfortunately did not attract much attention, though it richly deserved it, was "The War of Liberation and the Popular Army" by the Viet Minh General Giap. This book like the other two was not based on theory alone, but on actual experience of conducting operations against the French in Viet Nam, the former French Indo-China. Giap the victor of Dien Bien Phu proved himself to be a first-rate general and a great military leader.

The strategy and tactics employed by the communists against the French have not been much studied, as a consequence. This gap has now been ably filled by George K. Tanham in the book under review. The book studies the military aspects of the Viet Minh's successful struggle against the French. It analyses the various events of the war and provides lessons for future guerrilla warfare. The author examines the Viet Minh doctrine of protracted warfare developed over eight years of war. He also describes the military organisation, tactics and logistics of the revolutionaries. He chronicles their efforts to build a regular army and their emphasis on the integration of all means—political, economic and military—to win not only the war, but also the minds of the people.

The book affords many lessons. The first is the usefulness of the guerrilla fighter even in regular warfare. Active in all phases of the war he was effective in construction as well as destruction. Whereas it was previously held that a guerrilla could only be a useful auxiliary, the Viet Minh used him in many more ways and proved that he could operate any where. The second lesson is that it is very difficult for a regular army to fight guerrillas, unless especially trained for the job. The third lesson is that air power is not very effective in irregular warfare as there are no concentrations to be bombed, supplies to be cut and fronts to break through.

Let me sum up in the author's words. "It is well to bear in mind that, while advances in technology are introducing new weapons at a rapidly increasing rate, these do not render obsolete all of the more primitive forms of military conflict, nor do they detract from the importance of guerrilla warfare. In our planning and in our military training programmes, we must be prepared for all contingencies, and much can be learnt from the military and psychopolitical problems that France encountered in Indo-China."

A "must" book for every soldier.

D.R.S.

To Moscow and Beyond: A Reporter's Narrative by Harrison E. Salisbury. Michael Joseph, London, 1960). 259 pages. 25 sh.

This is an absorbing study of the Soviet Union, its Stalinistic past and Khrushchev present, and of the future relations between the Eastern and

Western Blocs. Of special interest to us at the present time is an analysis of Sino-Soviet discord and its impact on world affairs.

Mr. Salisbury has been modest in his choice of title for his work. It does not suggest more than a travelogue, of the superficial kind with which we are all too familiar. In fact, his work displays scholarship, sympathy and a deep understanding of the Soviet Union and her peoples. Mr. Salisbury has more than a nodding acquaintance with Russia—his first visit was during the war, a grim period during which he was able to form an objective assessment of the common people. He was there next during the "cold war," when suspicion was rife and evidence of Stalinist terror only too apparent. The present study covers the Khrushchev period and analyses the changes that have taken place over the years.

The author, an American, is a realist. He dwells on the history of the East-West conflict only to the extent of attempting to analyse the causes, and does not shrink from apportioning blame to his own country or the West, in general, where he feels that they have erred. His conclusions are objective and he ardently advocates a realistic and more sympathetic attitude on the part of the United States towards Russia. He is particularly conscious of the growing strength of China and puts forward a convincing case for American-Soviet cooperation in the face of this threat which, he maintains, is not only a challenge to them both, but to world peace.

All this is presented in a most readable form, interspersed with anecdote, illustrations, personal observation and a wealth of detailed knowledge. One story is worthy of reproduction. After he had delivered his anti-Stalin speech at the Twentieth Party Congress, Khrushchev was handed a note saying, "What were you doing whilst Stalin was committing these crimes?" He read the note to the audience and asked the author to rise and give his name. No one rose. "Well, comrades", said Khrushchev, "now you know what I was doing at that time." Khrushchev called this story a provocation, but Mr. Salisbury believes there is truth in it.

I greatly enjoyed Mr. Salisbury's book. It is not only very good reading but thought-provoking to the student of international affairs.

M.L.T.

The Future of Underdeveloped Countries by Dr. Eugene Staley. Harper & Brothers, New York, 1961). 483 pages. Price \$5.50.

The aim of the book is to interest the American reader in favour of more aid for under-developed countries. It seeks to make the American reader understand the changes in the political and economic thinking of the people inhabiting the under-developed areas as a result of communist propaganda. It seeks to bring about the special responsibilities of the United States in contributing its due share in the economic, social and political development of the democratic under-developed countries. The author feels that the basic human wants must be satisfied. He, therefore, advocates an integrated approach which would ensure an adequate living, a sense of security, a sense of freedom and participation, creative opportunities, a sense of belonging and, finally, a sense of purpose. The author discusses the means which would ensure such trends. The reorganisation of agriculture and industry, capital formation, population problem and raising the skills of labour and management have been enumerated as the important issues to be tackled. The book elucidates that side by side, with the high industrialisation of the country, the develop-

ment of the human resources, i.e., health, education, public administration, private institutions and business managements, trade unions and labour leadership and applied research, is quite necessary for the democratic development of the country.

It is gratifying that the writer has appreciated the democratic development in India and has made an impassioned plea for increasing the aid to India.

The book is a valuable contribution as a comprehensive study of political implications of economic development of under-developed countries has been made in it. The illustrations are convincing, the language is easy, the flow natural and there is sequence from beginning to the end. The author feels that the disparity in the economic development of various parts of the present day shrinking world is by far the most important factor contributing to the conflict between two extremely divergent political systems, viz., Democracy and Communism. U.S.A. is at the top amongst the highly developed countries and is the principal advocate of democracy. Russia, on the other hand, falls in the intermediate range of prosperity and is the champion of communism. As such, the under-developed countries constituting more than two-thirds of the world population offer the testing ground for these respective systems. The author feels that U.S.A. has a good deal to contribute towards the advancement of democracy by increasing its share of aid.

The author would like the United Nations Organisation to be the main agency through which all such aid from U.S.A. and other countries should be channelised to the under-developed regions of the world. He is of the opinion that in doing so the aid will be taken from the arena of controversial politics and propaganda, particularly of the communist type. People of the under-developed countries will feel more secure and dignified in receiving such aid as it will become institutional in character.

The Council on Foreign Relations has made a significant contribution to closer understanding of the international problems in sponsoring this study. The result is this excellent publication.

K.C.

Federalism and Economic Growth in Underdeveloped Countries by U. K. Hicks, F. G. Carnell, W. T. Newlyn, J. R. Hicks and A. H. Birch (George Allen & Unwin, London, 1961). 185 pages. 25 sh.

The book is a collection of four Symposium papers dealing with important aspects of federalism and economic growth in under-developed countries presented to a Working Party Conference held at Exeter in September, 1959. The aspects dealt with are: political implications of federalism in the new States, the nature and basis of economic growth, the role of fiscal and monetary policy and inter-Governmental financial relations in the new federations.

The aim of the Working Party was to throw light on the problems of emergent countries which have adopted or are in the process of adopting federal constitution. The participants in the Conference included economists, social anthropologists and political theorists of world-wide eminence. The papers, the comments and the discussions amply reveal that each participant endeavoured to give his individual approach and critical examination of the problems based on the experience of older federations, traditional social order, political ambitions of emergent countries and their programmes for economic development.

A study of the book would enable the reader to formulate a clear-cut appreciation of the problems involved in the federal structure in relation to economic growth with particular reference to economically under-developed countries. The comparative study of the old and new federations is useful in suggesting the adaptation of plans of economic development in under-developed countries to federal forms of Government when they come into existence. The study is also useful in bringing to focus in detail how a smooth transition from the unplanned to the planned era can be hoped for.

In the opinion of Mrs. Hicks, financial and fiscal factors have an special role in economic planning and development. She advocates that socio-anthropological forces of separation can be overcome by promoting economic inter-communication and inter-sectoral flows. Efforts should simultaneously be made, in her view, for minimising linguistic and religious rivalism. The transition involves psychological stress exercised by the urbanised classes. The problems are shown by Mrs. Hicks in a proper perspective.

Carnell's analysis of the political forces at work leading to the success or failure of federations is an illuminating one. He seeks to draw a distinction between federalism in reverse and federalism by aggregation. In his view, a federal State and a welfare State do not go together as for welfare centralisation is more responsive than federalism. We, in India, have established the Planning Commission presided over by the Prime Minister, which while giving advantages of a centralised planning yet gives to the constituent States freedom of executive action. Thus, while the conditions for the creation of the nationhood on the social and economic front are available, there is no threat or pressure by the Centre as the constituent units are associated at all stages with the formulation of the Plan. Indian experience could be more widely studied. It is true that Carnell has devoted some space to the Indian experience. He admits the stability of the Indian federation, although he fears that the States reorganisation on linguistic lines may lead to separatist tendencies. This is, however, taking a very narrow view of the contribution made by the Planning Commission and the National Development Council consisting of Chief Ministers of all the States where policy decisions are invariably taken. A more detailed study of Indian planning will dispel some of the doubts raised by Mr. Carnell.

The straightforward and thoughtful approach of the writer Newlyn in describing the role of fiscal and monetary policy is really worth a close study. A common monetary system reduces friction and has an important role in the process of development by bringing about economic amalgamation with the resultant advantage to all the participating States.

Birch discusses the various problems involved in inter-governmental financial transactions. The allocation of responsibility for the collection and utilisation of tax resources between the federal and State units has to be constantly examined. His analysis of the various methods adopted in taxation in the different federations is of value to this country which is attempting to raise tax resources on an ever-increasing scale for the successful implementation of the successive Five Year Plans for rapid economic development. This process is an important one for us as a backward country has a right to catch up with the more advanced countries. The fiscal and economic policies are discussed at times in great technical detail. The book is, however, on the whole couched in a language which creates sustained interest for the general reader and would be found useful by administrators and economists alike.

History of Mexico by Henry Bamford Parkes (Eyre and Spottiswoode, London, 1962). 392 pages. Price 42 sh.

In the winter of 1962 President Lopez Mateos of Mexico visited India, and was our honoured guest for about a week. His photographs were published in the newspapers and many people, even many educated people, came to know for the first time that there was a country called Mexico. The reason for this is lack of curiosity. Also, lack of books that could tell us about the six thousand years of Mexican history, the great cultures that rose and fell in that country, its present condition and its future hopes.

The book under review fills up the lacuna admirably. In the short space of less than 400 pages it brings before us the history of Mexico from ancient times to the present day. It tells us of the Indian tribes who learned to cultivate maize six thousand years ago, of the great Mayan culture when it was in flower and of the Toltecs who went down before the Spanish invaders.

Herman Cortez and the Spanish conquistadores came, they saw and they conquered. A blood bath and loss of freedom for Mexicans. But the country was brought into the main stream of European history. A new society took birth and a new system of government grew up.

The administration set up by the Spanish was despotic and feudal in nature. To begin with there were only two types, the conquerors and the conquered. Gradually racial mixing up began till an entirely new nation was born, partly Indian and partly Spanish. Such an amalgam of nations took place nowhere else in the world. The modern Mexican nation is the result.

Mexico was ruled by governors and administrators sent out from Spain. It remained a colony for about 300 years. By the beginning of the 19th century the Spanish monarchy had fallen on evil days. The central government became too weak and feeble to exercise control. The Mexicans rose in revolt and after ten years of civil war became free.

There were plenty of teething troubles, the difficulty of setting-up a stable government, law and order, the poverty of the country and the enmity and greed of their neighbour to the north-U.S.A. The period of the Empire leading to the death of the erstwhile Emperor Maximilian is one of the saddest chapters in history.

The last quarter of the 19th and the first half of the 20th century saw the rise and fall of a number of dictators, some benevolent some not so benevolent. Since 1940 things are better and a sort of democracy has found its feet. During recent years Mexico has made very good progress economically, and the beautiful modern architecture and the excellence of the visual arts are outward signs of this prosperity.

Although Prof. Parkes' book is a populariser, yet it is based on sound scholarship. The narrative is exciting, full of colour and drama.

D.R.S.

The Commonwealth Challenge by Derek Ingram. (London, Allen & Unwin, 1962). 291 pages. Price 30 sh.

At a time when there is considerable gloom all over the Commonwealth because of misgivings about the future of this unique association of nations (in

mic Community) this book attempts a highly optimistic, and even exciting, exposition of what the Commonwealth is, how it is functioning presently, and how it might do better in the future. The author is a British journalist on the staff of the *Daily Mail*, London, and the present book is a very much expanded version of his earlier (1960) publication, *Partners in Adventure*. It is addressed to the general reader, and the author makes no pretence of scholarship. But the facts are generally accurate, the judgments are sound and judicious, and it is written in a pleasantly readable style, even though the 25 chapters of the book are somewhat disjointed. The author is rarely blind to the mistakes of British imperial policy in the past; and at the same time, he writes with sympathy and understanding about the newer Asian-African members of the Commonwealth, even though lacking any deep knowledge about them. He steers clear between the two extreme attitudes to the Commonwealth—between the idealistic and romantic, often displayed among sections of the Old Commonwealth nations, and the cynical and the suspicious, so common among sections of the newer Asian-African members (in particular in this country, until the Commonwealth nations readily responded with sympathy and material support to our appeal for support against Chinese aggression).

One refreshing feature of the book is the large number of suggestions interspersed throughout the book (e.g., the establishment of a Commonwealth civil service, a Commonwealth Information service, the creation of peers from among the Asian-African members of the Commonwealth) to strengthen and improve the working of the Commonwealth which he firmly believes has a bright future. Some of them are not wholly new, and some others may be a little impractical, but the author is modest enough to say that 'even if only one or two prove useful, these chapters will have been worthwhile.' At the least, the author is hopeful that 'the more discussion provoked about the Commonwealth, the stronger it will become.'

Finally, the author believes that in the Commonwealth we have the instrument to bridge the gulf between the East (meaning the Asian-African countries) and the West. 'We have in our hands the instrument to achieve a world in which black men and white can live together in peace and dignity and equality.' There is even a chance, he thinks, that the Commonwealth contains the seeds of a world government. For these reasons, he deplores the British decision to join the nuclear race. 'If we had concentrated our money and resources on developing the Commonwealth, our place in the world would have been unassailable, and the mutual benefit to all the nations of the Commonwealth would have been infinite.' And, of course, he is opposed to Britain joining the European Economic Community. 'Without the Commonwealth alongside us,' he says, 'we shall become utterly dependent on our friends and neighbours, an over-crowded island with a great past and no future.'

Unfortunately, however, this book has come out a little too late for it to influence anybody's judgment about the Commonwealth, because the powers-that-be in Great Britain have already made up their mind about what the future of the Commonwealth should be, as far as their limited national interests are concerned. Nevertheless, it is good to read these days a book on the Commonwealth by a British writer which combines a sober assessment of the past, an optimistic future and sympathy for, and understanding of, the Asian-African members.

The Voice of Freedom: The speeches of Pandit Motilal Nehru Ed. by K. M. Panikar and A. Pershad. (Asia Publishing House, Bombay, 1961). 563 pages. Price Rs. 15.

Published on the occasion of the birth centenary of Motilal Nehru, the 'Voice of Freedom' is another welcome addition to the literature on the life and works of the political leaders of India. A massive volume running into more than 500 pages, the book is divided into five sections comprising of Motilal Nehru's presidential addresses to the Indian National Congress, his speeches in the U.P. Council as well as in the Legislative Assembly, his writings and public speeches on the Swaraj Party and consequent entry in the Councils. However, none of his writings in the journal 'Independent'; which was published by him, are mentioned in the book.

The 'Voice of Freedom' aptly manifests the manifold personality—the brilliant lawyer, the fiery parliamentarian and the fierce fighter for freedom—that Nehru was. His speeches also reflect the vast labour he must have put in while preparing them for, in order to support his case, he quotes exhaustively from official and unofficial sources. Consequently, some of his speeches not only give the pros and cons of the issue but also provide a political perspective of this period as envisaged by one of the best legal brains of the times.

The editors have done well to annotate the speeches wherever necessary which has made the speeches more meaningful. They have also provided biographical data on eminent men of time which is a useful guide for those not well acquainted with the contemporaries of Mr. Nehru. However, it appears that a brief account of Motilal Nehru's life explaining his role in the National movement, among other things, as one of the founder members of the Swarajist Party as well as the author of the famous Congress report of 1928 on the Indian constitution, would have considerably enhanced the value of this work.

U.P.

The Indian National Movement and American Opinion by Dr. Harnam Singh. (Central Electric Press, Delhi, 1962). 400 pages. Price Rs. 18.

The book contains an extensive study of American opinion in relation to Indian Government and politics between the years 1919-1947—a period of strife and struggle for India and a period marked by a growing sympathy of the American people for the cause of India's freedom. It will be useful not only as a historical study but, in reality, it is a contribution towards greater understanding between these two great countries.

America and American people have always been the harbinger of democracy and the contribution of the famous American President Abraham Lincoln for ameliorating the lot of the down trodden people will go in the history of mankind as a great act of benevolence and extreme human sympathy. True to the traditions of a people who have always upheld the dignity of human soul, American public opinion, through its press and platform, has served as a great dynamic force for furthering the cause of India. Inconsistencies in the American public opinion, if any, have been due to the misrepresentations of the facts by the rulers of that period who always aimed at repressing the actual facts and wanted to further their own political aims by persuing a policy of 'divide and rule'.

It is no exaggeration to say that American public opinion has welded a powerful influence, particularly in the post war period, in helping India to

achieving her independence. The generous help that America has been giving to India for building her economy to banish once for all ignorance, want, squalor, and hunger on the road to reconstruction is a living monument of the assistance that one of the biggest democracies of the world has been giving to another democracy of no less magnitude.

The book will, no doubt, go a long way in strengthening the bonds of friendship that exist between the two great peoples of the world, the people who have been striving hard for a lasting world peace.

The Author has dealt with the subject extensively and tapped numerous sources to give relevant information on the subject. He has made an effort throughout to describe, as briefly as possible, the events commented upon by the press and the individual writers on every aspect of Indian administration and politics, in a manner which gives continuity to the narration of the political movement during the period 1919-1947. The way the subject matter has been presented is also commendable. The style is lucid and the book holds attention.

K.S.S.

Orchid House by Michael Edwardes. (Cassel, London, 1960). 216 pages. Price Rs. 25.

Orchid House is a political chronicle of the Kingdom of Oudh during the last three decades of its existence as a State. The chronicle, characterised by the Author's style of presenting facts in a dramatic manner, not only depicts the miseries and splendours of the Eastern Kingdom but also brings into sharp focus the responsibility of the British for the sorry state of affairs that prevailed in the native State. One is overwhelmed by the story of nepotism, corruption in the administration as described by the prominent authorities of the times. One is revolted by the fabulous extravagance of the ruler, and of his harem, and their indulgence in barbaric forms of amusement. In contrast to this picture of the palace, is the appalling state of the people who were forced to foot the bills of the royalty. The ruthlessness of the state officials and the extortion to which the people of Oudh were subjected to is described by Mr. Edwardes no less effectively. Last but not least, the awe-inspiring veneration of the ruler to the resident and the attempts made by some of the rulers for rectifying the administration in response to the occasional stern attitude of the residents made it obvious that the British, if they wished, could effectively put pressure on the ruler to amend the conditions in the State. However, it is evident that the company itself was more interested in exacting money from the ruler than in the good administration. Consequently, either it took refuge in sticking to its policy of non-interference in the domestic affairs of the State or even if it took any measure, it was half hearted. In the long run, this policy was to lead nowhere except to the annexation of the State due to maladministration for which, in a way, the company itself was no less responsible.

It is significant to note in this context that the administration of Oudh as depicted in 'Orchid House' is not peculiar of Oudh only but could be applied to most of the Indian States with minor variations. The book thus is a valuable addition to the literature on the Indian States' administration. The only thing which Mr. Edwardes has completely omitted is the 'benevolent' aspect of the rulers. Whether it was the Nawab of Oudh or the Nizam of Hyderabad, all of them were great patrons of art and culture and encouraged the local talents to develop in this respect. Indian traditions and culture, which could not withstand the onslaughts of western impacts in British India could survive and flourish in the Indian States.

U.P.

CORRESPONDENCE

Correspondence is invited on subjects which have been dealt with in the Journal, or which are of general interest to the Services.

TO

The Editor of the U.S.I. Journal

A PLEA FOR PURE UNITS

The editors have done well to annotate the speeches whenever necessary.

In his article entitled "man Management in Guards Battalions" published in April-June 1961 issue of your Journal, Major R. D. Palsokar, MC, has narrated many good points on the subject. I feel he has considered this problem from a very parochial point of view, and has not taken into cognizance the various problems—mainly administrative—which are created by such a hotch-potch of congregation.

The main draw-back in such an organisation is the fact that men are drawn from all castes, creeds, communities, areas: from Kashmir to Cape Comorin and from the Punjab to the eastern extremity of our country. Such a conglomeration of communities does not, I regret to point out, form as formidable a fighting unit as he has made it out to be. I feel that, on the contrary, this artificial diffusion of communities dilutes the formidable character of the various castes and creeds which now exist in our army. Let us take a section consisting of a Dogra, a Sikh, a Jat, a Rajput, a Maratha, a Gorkha, a Kumaoni, a Malayali, a Bengali, an Oriya, etc., and imagine them going through an assault. What pace will they keep: that of a Panjabi, of a Gorkha or that of a Bengali? What war cry will they shout: Bole-So-Nihal, Kali Mata Ki Jai or Chatarpati Shiva Ji Maharaj Ki Jai? He might argue that "Jai Hind" could solve this problem. I do not agree there. Not going into the sentimental aspect of this slogan, I don't think this can give any 'josh' to the men going through in assault. Because "Jai Hind" is a greeting, not a war cry; and what is needed is a war cry.

The British Army, which we imitate in many ways due to certain reasons, restrict their recruitment for their various infantry regiments to counties, and do not enrol in one regiment men from all over the British Isles. Does it mean their regiments have no *esprit de corps*? Far from it. Similarly, in our own army, regiments which are pure, or which enrol two or three categories of men, are in no way lacking in this *esprit de corps*. I would say such units have more of the *esprit de corps* and will always have it so, as compared to what the Guards can boast of. A similar experiment was carried out when the Border Scouts were created. There, too, men from all over the country were enrolled in every unit of the Border Scouts. And from my personal experience I can say that that experiment wasn't a success. And, I feel, it was a wise step to do away with this set up. I feel that pure regiments would be better, but if this cannot be done due to any reasons, I would say that the minimum we should aim at is to have at least pure rifle companies, i.e., each rifle company having only one type of community, e.g., Sikhs, Jats, Dogras, Rajputs and Marathas. And there should not be more than two different communities in each regiment.

Now, let us take religion. There are numerous religions in existence in our country today. These are: Hinduism, Islam, Sikhism, Zorastrianism, ranging

from idol worship to that who believe there is but one God. Each denomination would require a religious teacher and a place to worship. If so, how many such religious teachers and places of worship one will have to provide a unit with? Many. This will create additional administrative problems. Then, the author writes: "The Pundit who knew only Hindu scriptures before he joined the battalion has to study the teachings of the Mohammed, Christ and Guru Nanak to be able to talk to all the men at the same time. Is it necessary? Not at all. But even if, for the sake of argument, it is so, I have yet to come across a religious teacher as competent as visualized by him. Also, if only one religious teacher can function for men of all the various denominations, which I doubt very much, why do we cater for separate religious teachers for every denomination? One should not be blind to facts; facts remain facts, and to ignore them is to deceive one's own self. Neither does this help in making the guardsmen more Indian than those serving in the pure regiments or the regiments catering, at the most, for two or three creeds or communities such as The Panjab Regiment and The Grenadiers.

History gives us many examples where people belonging to the same religion have jumped at each other's throats. The most glaring example is the Second World War when Germans, French, British—all Christians—fought so ruthlessly against each other.

And, what about the religious functions? How many such functions will a unit of this type be celebrating every year? Many: because we, in this secular, democratic state of ours, cannot ignore religious sentiments of any one denomination. So, you see how many days, man-hours, etc., will thus be wasted in every such unit.

Then, the question of language. It is admitted that Hindi is the *lingua franca* of India. But, this does not mean that the men never converse in their own mother tongue. Off parade, and even on parade, they, like any one else, love to use their own mother tongue, because one enjoys it more when conversing in one's own mother tongue. Off parade, this tendency will naturally tend to create a number of linguistic groups in a unit which will be a problem for the Commanding Officer, who is already held "personally responsible" for so many activities going on in the unit. And there is also the question of assigning the regimental language to such units? "Hindi," some one will answer without thinking. But it can't be so. The regimental language of a regiment or corps is the language spoken by other ranks of the regiment/corps—this, of course, is true when viewed not from a communal or political stand point. Hence, another problem.

This mixture of numerous communities in one unit creates many other problems besides the ones mentioned above. The atta-eater remains an atta-eater, and the same is applicable, I should say even more, to the rice-eater. The atta-eater may eat rice for a few days but he does not become rice-eater for ever, and the same principle applies equally to the rice-eater. So, why increase such avoidable problems.

Major Palsokar admits the "natural cementing factor, which a pure unit can have, because", quoting his own words, "the men come from the same area, speak the same language and are bound together by a bond of common culture and heritage." And "many are even inter-related." These factors go a long way in making a unit more formidable than the one which contains every type of

the countryman in it, because men from the same area understand each other better. A Dogra would have better understanding of a Sikh or a Jat than of a Tamilian or a Malayali. When he says that in Guards units the "men do not think of themselves as Jats or Marathas," I do not agree with him. This is a very high ideal to aim at but can it be achieved? I have my doubts.

A point with reference to the context. The author has stated about the Guards battalions having many battle honours, serving VCs and "veterans of many battles". May I ask him as to how many battle honours and other gallantry awards can they boast of since their creation as Guards? The traditions are created and nourished by blood and not by borrowing, nor by imitations, because imitation is never perfect.

GULCHARAN SINGH
Major.

17th Battalion
The Sikh Regiment
56APO
29, Nov., 62.

HIMALAYAN FRONTIER FORCE

I feel impelled to write to congratulate you* on your article on the "Himalayan Frontier Force" which I have just read in my copy of the USI Journal. As an ex-"Political" and also as the son and grand-son of "Piffer" colonels, I heartily endorse all you have written and hope your words may help to preserve and strengthen the 'Frontier Spirit' which India will so soon need in the inevitable struggle with the Yellow Peril!

D. G. HARINGTON HAWES

34, King Street,
London, E.C.2.

* The author, Lt.-Col. M. R. P. Verma.

SECRETARY'S NOTES

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